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United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
University of Florida
Institute of Food and
Agricultural Sciences,
Agricultural Experiment Stations,
and Soil Science Department,
and the Walton County
Board of County Commissioners

Soil Survey of Walton County, Florida

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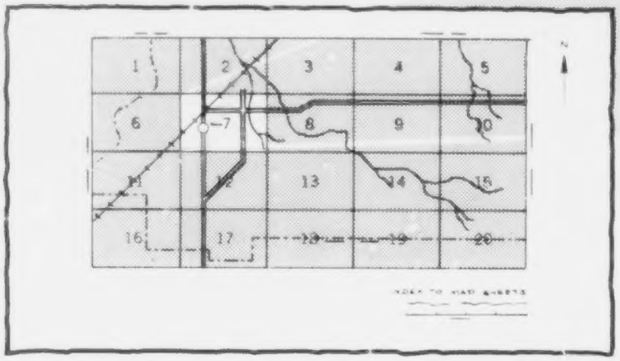
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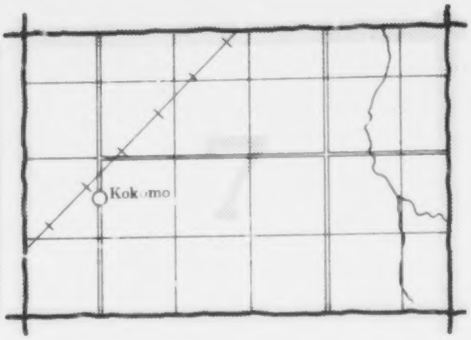

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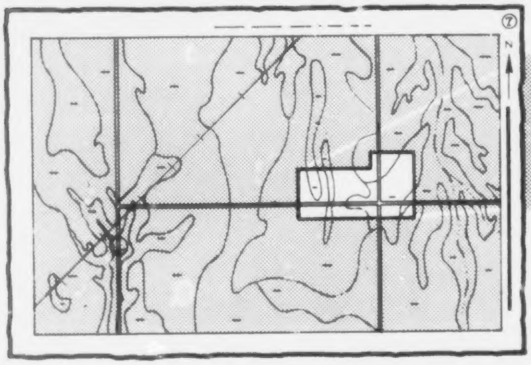

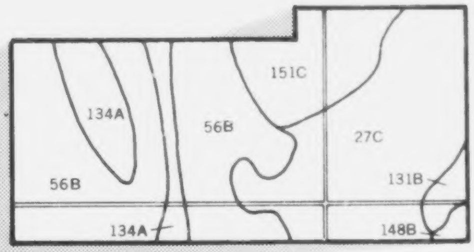
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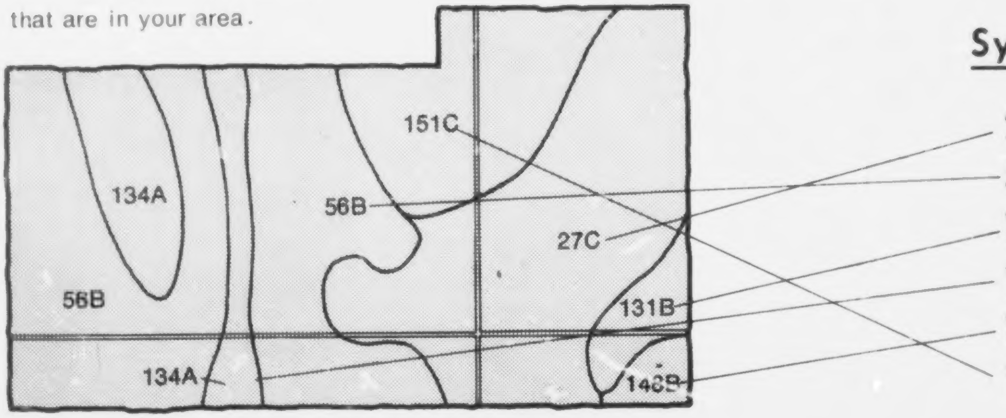
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THIS SOIL SURVEY

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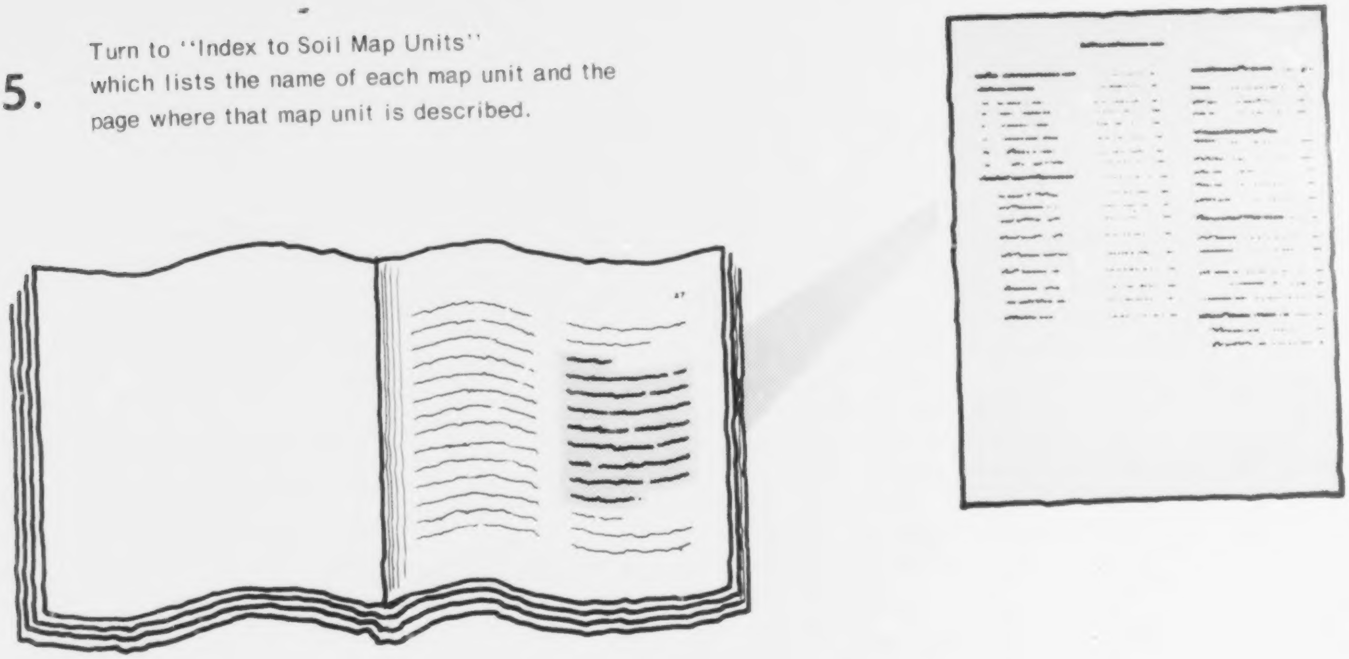
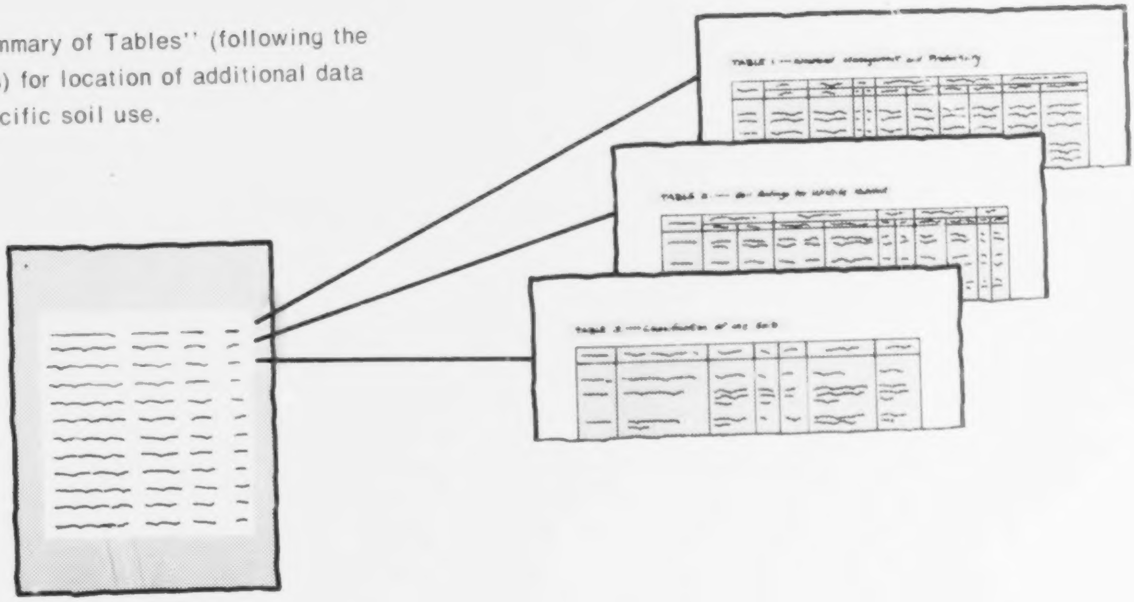


6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; for specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1984. This soil survey was made cooperatively by the Soil Conservation Service; the University of Florida Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department; the Florida Department of Agriculture and Consumer Services; the Florida Department of Transportation; and the Walton County Board of County Commissioners. It is part of the technical assistance furnished to the Choctawhatchee River Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Small manmade ponds are common throughout Walton County. The soil surrounding this pond is Troup sand, 8 to 12 percent slopes.

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Foreword

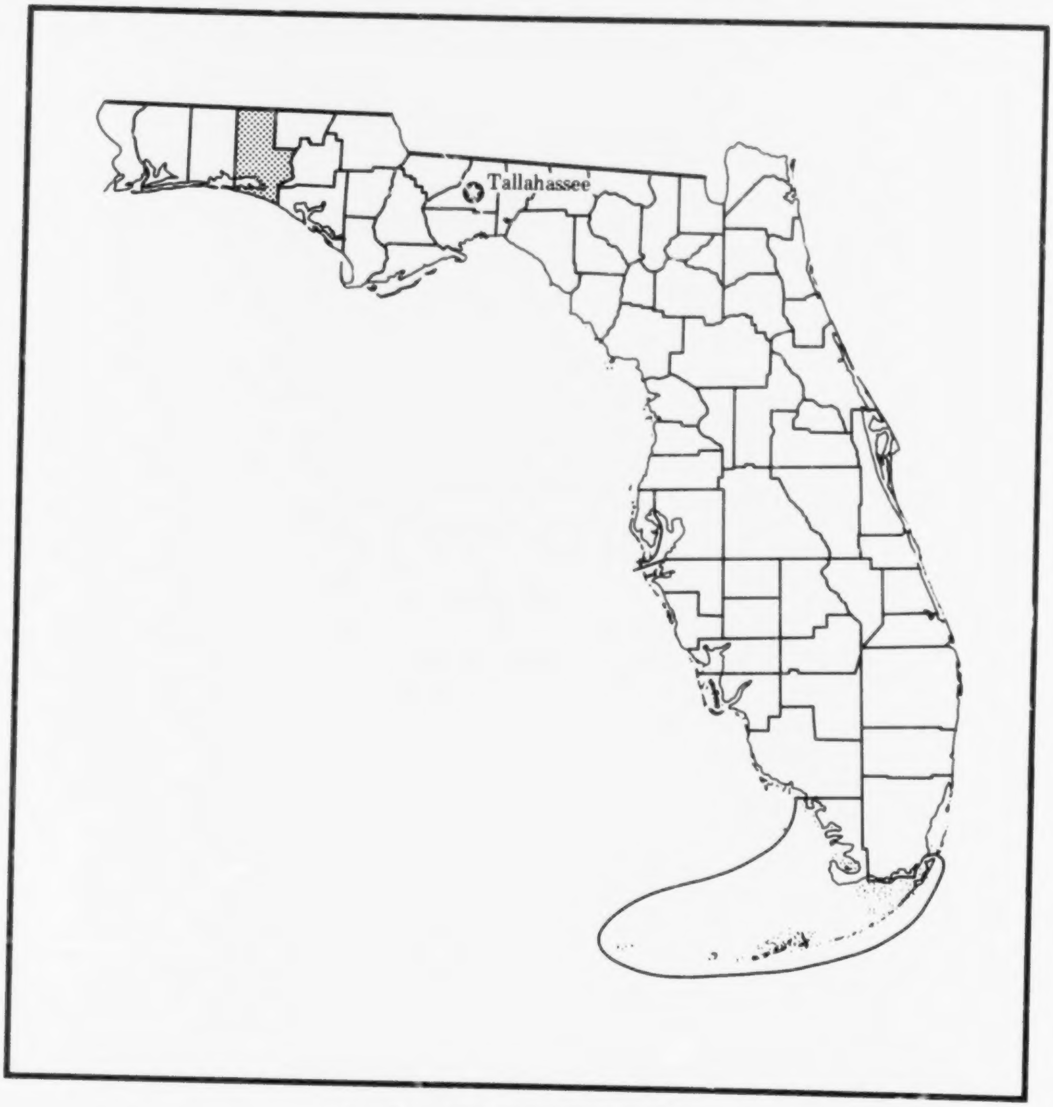
This soil survey contains information that can be used in land-planning programs in Walton County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

James W. Mitchell
State Conservationist
Soil Conservation Service


Tallahassee

Location of Walton County in Florida.

Soil Survey of
Walton County, Florida

By John D. Overing and Frank C. Watts, Soil Conservation Service

Soils surveyed by H. Harrel Weeks, Joseph P. Wilson Jr.,
Perry R. Jackson, and Paul E. Pilney, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
In cooperation with
University of Florida, Institute of Food and Agricultural Sciences,
Agricultural Experiment Stations, and Soil Science Department;
Walton County Board of County Commissioners; and
Florida Department of Agriculture and Consumer Services

WALTON COUNTY is on the Gulf Coast in the northwestern part of Florida. The county has a total area of 726,400 acres or 1,135 square miles. About 5,320 acres is fresh water lakes, and about 52,400 acres is large bodies of brackish water. The county is bordered on the north by the State of Alabama and on the south by the Gulf of Mexico. The boundaries of map units in Walton County join those of Bay, Holmes, and Washington Counties to the east and Okaloosa County to the west.

Walton County is in the Florida Panhandle part of the Coastal Plain. The Choctawhatchee River, which forms some of the eastern boundary of the county, is the largest river in the area. It flows into the Choctawhatchee Bay, which is a tributary to the Gulf of Mexico. The Alaqua, Black, Bruce, Caney, Lafayette, Little Alaqua, Limestone, Natural Bridge, Rocky, and Seven Runs Creeks and the Shoal River are also in the county.

Elevation ranges from the highest point in Florida, 345 feet above sea level, near Lakewood in the northwestern part of the county to sea level in the southern part. The topography is nearly level to strongly sloping in the northern part of the county, gently sloping to steep in the central part of the county, and nearly level to gently sloping in the southern part of the county.

The county is about 50 miles long and about 33 miles wide. DeFuniak Springs, the county seat, is in the central part of the county. Some of the towns and communities are Argyle, Darlington, Glendale, Freeport, Mossy Head, Paxton, Redbay, Santa Rosa Beach, and Choctaw Beach.

Walton County is primarily rural and agricultural. The economy is based on agriculture, but small industries and the military are also important.

General Nature of the County

This section describes the environmental and cultural features that affect the use and management of soils in Walton County. These features are history and development, climate, physiography and stratigraphy, natural resources, farming, recreation, and transportation.

History and Development

Anna Reardon, historian, and Oscar Harrison, retired county extension agent, helped prepare this section.

Walton County was established in 1824. It was named for General George Walton, secretary of West Florida during the governorship of Andrew Jackson and secretary of the East-West Florida territory from 1822 to 1826. Walton County was formed from part of Escambia County. Santa Rosa, Washington, Holmes, and Okaloosa Counties were formed from parts of the original Walton County *(25)*.

Before the county was established, the Euchees Indians lived in the area next to the Choctawhatchee

Bay and River and extending up to the area that is now Redbay. Spanish explorers passed through the area in the 1500's. Scottish people from North Carolina and South Carolina were invited to the area by Sam Story, chief of the Euchees Indians. They arrived in 1820 and settled near Bruce Creek across from the area that is now Eucheeanna. Others settled in Alaqua Valley and near Lake Jackson.

The first county seat was on the stage coach route from Tallahassee to Milton. It was located in the home of the first justice-of-the-peace in the Alaqua community. In 1845, the county seat was moved to Eucheeanna. The Eucheeanna Courthouse burned in 1885, destroying all records. The county seat moved to DeFuniak Springs in February 1886. Early villages were Eucheeanna, Freeport, Redbay, and Argyle. Portland, Gaskin, Darlington, Mossy Head, Liberty, Paxton, Glendale, and Bruce were established later.

The early economy of Walton County depended on sheep, cattle, woodland, saw mills, turpentine stills, and agriculture *(26)*. In the early 1920's, a tick eradication program was completed and the quality of cattle was greatly improved. In the late 1940's, a no-fence law was passed and large herds no longer roamed the area. This helped farmers improve their pastures. Turpentine stills decreased as synthetics gained favor. The important crops were corn, cotton, sugarcane, tobacco, sweet potatoes, and peanuts. Pulpwood remains an important factor in the economy.

The Choctawhatchee National Forest was established in the southwest part of Walton County in 1908. In 1940, the U.S. Forestry Service ceded the Choctawhatchee National Forest to the War Department as part of Eglin Air Force Base.

Climate

Agriculture depends as much on climate as it does on the soil. The species, expected yields, and management needed are affected by the average length of the growing season, the amount and distribution of rainfall, and the frequency, intensity, and timing of extremes in temperature and precipitation.

Walton County has a warm, humid-temperate climate. Summers are long, warm, and humid and winters are mild and short. The Gulf of Mexico moderates temperatures during the winter along the coast, but the effect diminishes appreciably a few miles inland. The average annual temperature is 68 degrees F., and rainfall averages 66 inches a year *(22)*.

Table 1 gives data on temperature and precipitation for Walton County as recorded at DeFuniak Springs for the period from 1896 to 1952.

About 44 percent of the annual precipitation occurs during June, July, August, and September, although unusual amounts may fall during any month. The greatest amount of rain occurs in July and August. October and November have the least rain, followed by April and May. Most rainfall in the summer occurs during the afternoon and evening in the form of showers or thundershowers. These showers, which occur on the average of 45 percent of the days, are widely scattered, of short duration, and are often excessive. Summer showers are occasionally heavy, and 3 to 6 inches of rain can fall in an hour or two. These showers occur more often in the southern part of the county than they do in the northern part because of the moisture from the Gulf of Mexico. Day-long summer rains are rare, but when they occur, they are almost always associated with tropical storms or hurricanes. Rainfall in excess of 8 inches during a 24 hour period can be expected in about 1 year in 8. This generally occurs when a hurricane or tropical storm passes through. The hurricane season is from June through November.

Rainfalls in winter and early in spring occur as a result of invasions of cold air masses. These rainfalls are gentle, of longer duration, generally 1 to 3 days in length, and more widespread than the rainfalls in summer. The Gulf of Mexico diminishes the effect of these large-scale weather developments in the southern part of the county, and as a result, more rainfall occurs in the northern part.

Snowfall is rare, and measurable snow occurs about once in 10 years. It rarely remains on the ground for more than 24 hours. The heaviest snowfall recorded in Walton County was on February 12, 1958, when the area received 2 to 3 inches of snow.

Hail falls occasionally during a thunderstorm, but hailstorms are small, and damage is minimal.

Ground fog generally occurs at night or early in the morning late in fall, in winter, and early in spring. The sun dissipates the fog very quickly.

The Gulf breeze is largely responsible for the mild, moist climate, but the proximity to the North American land mass gives this county a slightly more continental climate and greater temperature extremes than are encountered in peninsular Florida. The average temperature in June, July, and August is 80.8 degrees F. Temperatures of 90 degrees or higher occur in June, July, August, and September, but 100 degrees occurs only a few days a year. The warm and humid days are moderated by clouds and the associated thundershowers or showers. The Gulf of Mexico moderates most of the air masses, and as a result, hot desiccating winds and very high temperatures seldom occur. Warm, summery weather lasts until early in October.

Although the county is punctuated with periodic invasions of cold air masses from the north, the cold periods only last from 1 to 3 days. The coldest weather generally occurs on the second night after heat is lost through radiation. The average temperature in December, January, and February is 54.2 degrees F. Temperatures range from the high forties to the low seventies. Freezing temperatures occur on an average of 20 days every winter.

Freezing temperatures of 20 degrees F. or lower can be expected at least one winter out of two. Temperatures as low as 10 degrees F. are rare and occur only once in every 25 years. The lowest temperature on record is 0 degrees F. recorded at DeFuniak Springs on February 13, 1899. Table 2 gives the freeze dates in spring and fall. The earliest freezing temperature in fall is November 4, and the latest in spring is March 26. Freeze data for the county are shown in table 3.

March is the windiest month of the year with wind speeds averaging between 8 and 15 miles per hour during the day but dropping below 8 miles per hour at night. The prevailing winds are from the north and northwest in spring and summer. August has the lowest average wind velocity. Tornadoes are common in spring. A moderate Gulf breeze blows during the summer, but the breeze diminishes greatly further inland. High winds of short duration occur occasionally with thunderstorms in summer and with fronts moving across the country in other seasons. Tropical disturbances can generate very destructive winds up to 200 miles per hour. These seriously destructive hurricanes occur about once in every 8 years during June to November. Hurricanes, with high winds and accompanying rainfall and tornadoes, can destroy crops by wind damage and flooding. Erosion is a severe hazard when more than a half inch of rain falls within an hour or two.

At the other extreme, an occasional short drought occurs late in spring when plants are beginning to grow and temperature is high. This moisture deficit can damage crops, pastures, and gardens, and it can only be overcome by supplemental irrigation.

Physiography and Stratigraphy

Walter Schmidt, geologist, Florida Geological Survey, helped prepare this section.

Walton County contains three major geomorphic divisions—the Western Highlands *(8)*, the Gulf Coastal Lowlands, and the River Valley Lowlands (fig. 1).

The Western Highlands is a discontinuous area of relatively high land that extends from Alabama and Georgia into Florida across the northern part of the state. The southern boundary is about 30 to 40 miles south of the state line and is generally marked by a prominent seaward-facing escarpment, the Cody Scarp *(13)*. These highlands have been described as the remnant of a large delta plain that blanketed the older Miocene deposits in post-late Miocene to early Pleistocene time *(24)*.

In Walton County, the Western Highlands is composed of a Pliocene-Pleistocene delta (Citronelle Formation) whose surface has been dissected by streams, exposing underlying Miocene clastics. The topography is characterized by erosional remnant hills that have relief of up to 100 feet. The highest hills reach elevations in excess of 340 feet near the state line and slope to elevations of about 150 feet in the southern part of the county where the Pleistocene marine terrace deposits overlay them. These hills are composed of a heterogeneous mixture of grayish to yellowish orange silts, quartz sands, and gravels that are poorly indurated with clays and iron oxide, massive clay beds, and post-depositional limonite.

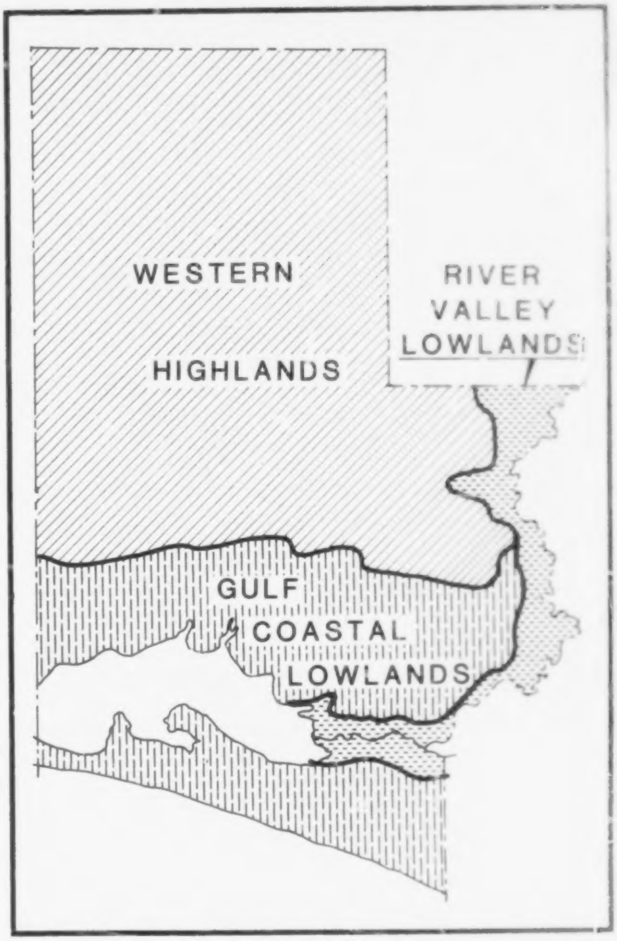


Figure 1.—Physiography divisions of Walton County, Florida.

A feature that is characteristic of the highlands area of west Florida is called "steepheads." At the head of many small creeks or streams, a spring emerges at the base of a steep-walled, semicircular bluff. Indurated sands and sandy clays are underlain by slightly indurated sands and clays and shell marls. The surface waters pass into the earth and, upon reaching the underlying clay or marl beds, emerge as springs. The indurated sandy clays near the surface stand up vertically, and the softer sands, at a greater depth where the springs emerge, erode easily. The result is the formation of a nearly vertical bluff at the base of which springs emerge. These bluffs or stream heads assume in time a semicircular form, which is the "steephead." The steephead thus formed is retained by the stream as it gradually extends its way back into the plateau. The steephead is generally from 50 to 60 feet or more deep into the plateau, depending upon the depth at which the ground waters emerge as springs *(16)*.

Relatively flat, swampy areas that are locally called "bays" also commonly occur in the highlands area of Walton County. The bays range from a few acres to over a square mile in area. The terrain immediately surrounding the bays is steep, and the bay floors are usually 60 to 80 feet or more lower than the surrounding highlands. The bays are frequently interconnected with small creeks. Their outlines are very irregular, and some of the larger bays have hills within their broader limits. Large streams are not responsible for the erosion of these bays. They are the result of dissolution of calcium carbonate deposits (limestone) with subsequent surface lowering. Although sinkholes occur in this fashion and are present in the area, the bays are unlike classical sinkholes. The bays are large; have irregular outlines and relatively flat, swampy bottoms; and are apparently forming at a slower rate than classical sinkholes.

The Gulf Coastal Lowlands is a series of coast-parallel plains or terraces composed of clastics that extend from the coast to successively higher levels in a landward direction. Each terrace is separated from the next by an escarpment or gentle slope. In the southern part of Walton County, plains lying almost parallel to the present coastline are bounded by escarpments.

During the Pleistocene Epoch, world-wide fluctuations of sea level were caused by the formation and dissipation of polar ice caps. The major advances of the ice caps are referred to as glacial stages. These advances required vast quantities of water supplied from the seas, which resulted in lowered sea levels. When the ice caps receded, large quantities of water were released resulting in higher sea levels. Since each advance and recession of the ice caps was of a different magnitude, the lowering or rise in sea level was also different.

During the period when the ice caps were in an interglacial stage, the higher sea levels encroached upon the land. At these high stands, the seas eroded the inundated sediment and redeposited it in the form of a sloping plain or terrace. At the landward margin or shoreline of the seas there exists a terrace with its shoreline escarpment.

The River Valley Lowlands is the flood plain deposits of streams and their associated valleys. Many streams in the Coastal Plain are old enough to have extended well back into the Pleistocene Epoch, and the geomorphology of their river valley lowlands reflects the Pleistocene sea level fluctuations as do the coastal marine terraces.

Rivers pass through a period of downcutting or erosion and alluviation. The younger the stream, the more vigorous the erosion and the more irregular and steep is its longitudinal profile or slope. Gradually, a valley is cut and the flood plain sediment is deposited within it, and a condition of equilibrium is approached. The stream acquires a profile just sufficient to permit transportation of its load, and it then meanders back and forth across its flood plain. However, a change in any aspect of the stream system is reflected in a readjustment of the entire system by either renewed downcutting or renewed alluviation within its valley. Consequently, during the life of streams that originated during the Pleistocene Epoch, a fluvial terrace exists for each lowering of base level. The terrace was formed as a flood plain of the river. Fluvial terraces above the modern flood plain are common along streams in the Coastal Plains Province.

Stratigraphic units in the Western Florida Panhandle have been extensively described *(11, 14, 23)*. By studying cuttings from deep oil tests and numerous water wells, many geologic formations have been mapped. The deepest unit penetrated in Walton County is a granite at 14,480 feet below the surface. Above that are several thousand feet of shales and sandstones of Mesozoic age. Next higher in the section is about 2,000 feet of clays and calcareous sands. Still higher is 1,000 or 2,000 feet of sandy limestones and calcareous glauconitic sands. Nearing the surface are dolomitic limestones, sandy clayey limestones, and finally, shell beds, clayey sands, and sands.

The three major stratigraphic units exposed in Walton County are—the Alum Bluff Group, the Citronelle Formation, and the Terrace and Fluvial Sands.

The Alum Bluff Group sediment extends in a wide band across the Florida Panhandle from Leon County in the east to Okaloosa County in the west. The sediment is generally covered by the younger Citronelle Formation. As a result, exposures are limited to areas where the Citronelle sands have been removed, mostly stream bluffs and the side slopes of river valleys. The outcrop pattern can be observed on the geologic map (fig. 2). All exposures are on side slopes of stream valleys and bluffs where the overlying sands and gravels have been removed.

These shell beds of the Alum Bluff Group were deposited in a shallow water marine environment. Some locations contain fauna characteristic of brackish waters; whereas other outcrops have representatives of open sea conditions. This fauna is indicative of shallow water inland bays often washed by tidal action.

The Alum Bluff Group sediment in the Walton County area is composed of quartz sands, clays, and shell beds. The lithology ranges from sandy clay or clayey sand, to

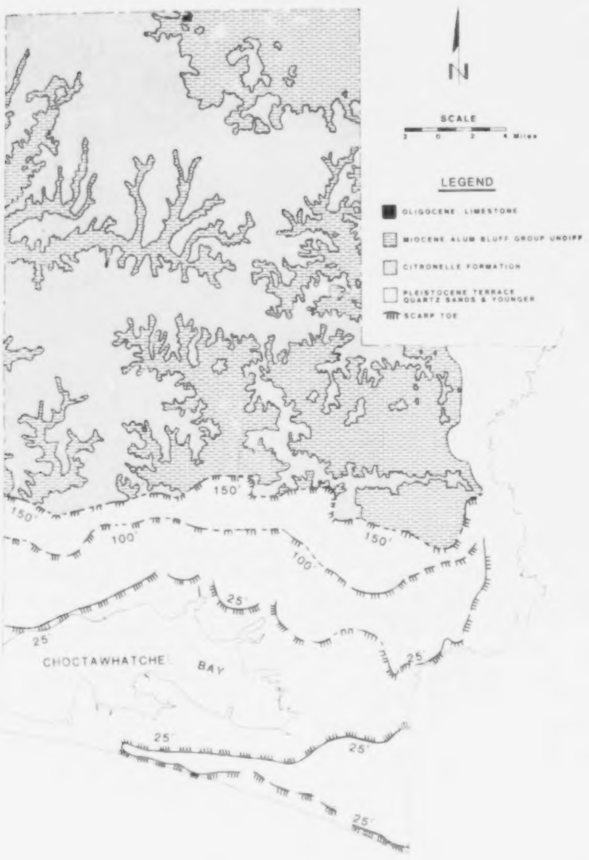


Figure 2.—Geologic map of Walton County, Florida.

shell marl, to pure sand or clay. Accessory minerals include phosphate, glauconite, various heavy minerals, pyrite, and mica. The clay minerals of the Alum Bluff sediment are dominated by montmorillonite but also contain small amounts of kaolinite and illite. The clay beds are generally gray but may be dark gray to black to greenish gray. Limestone is a minor component of the Alum Bluff lithology except where it occurs in discontinuous lenses or beds.

The Citronelle Formation consists of all surface deposits in the northern two-thirds of Walton County that occur stratigraphically above the Alum Bluff Group sediment. This includes the interstream divides, but in most cases not the stream valleys because the Citronelle deposits have been removed by erosion, exposing the Alum Bluff strata.

The Citronelle deposits range from clay through gravel, but sands are the most common size fraction. Numerous small quarries are throughout the county. A 5- to 15-foot section of the Citronelle Formation may be observed in these quarries, and all size fractions and admixtures are generally represented in a section only a few feet thick. The deposits are commonly cross-bedded, leticular, graveliferous sands that contain an occasional thin bed of clay and varying amounts of silt and clay that tend to weakly indurate the sediment. Bedding has not been observed that extended more than a few hundred feet without noticeable changes in thickness and variations in size fractions. Channel scour and fill sequences are also common.

Overlying most of the mapped and named geologic formations in Florida is a sequence of relatively unconsolidated, clean quartz sands. These sands were deposited during the many Pleistocene sea level fluctuations as the shallow seas eroded, winnowed, and redeposited the existing sediment. In Walton County, most of this sand represents reworked Miocene and Pliocene deposits, such as the Alum Bluff Group and the Citronelle Formation. This appears on the geologic cross sections downdip near the present coast (fig. 3).

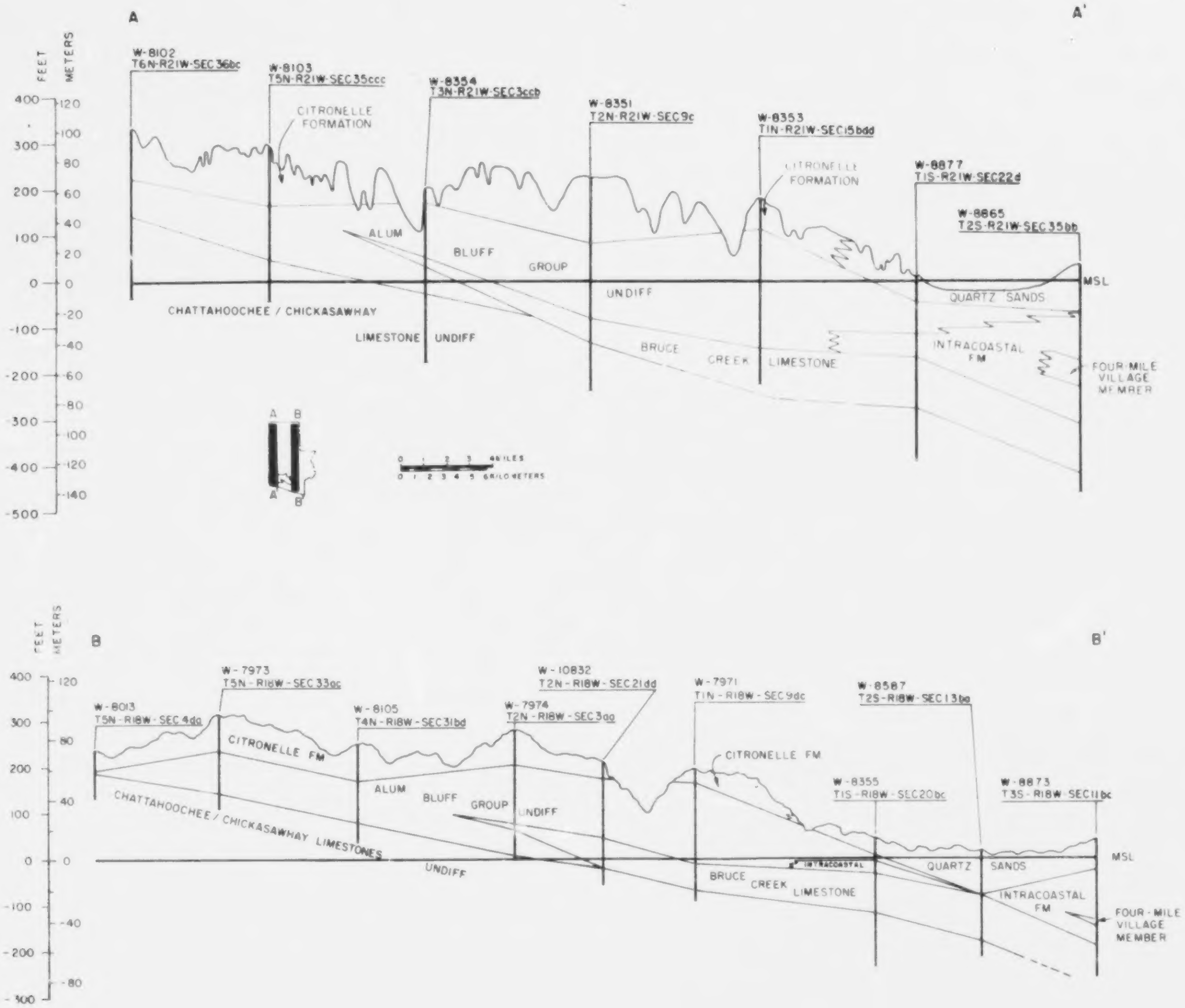
Ancient sea level fluctuations to varying degrees have left behind terraces and shoreline scarps on the landscape. These marine features have been mapped by several geologists throughout Florida *(9, 10, 26)*. In Walton County, this coastal wedge of sands thins northward and seems to pinch out near the 150-foot elevation line along one of these ancient scarps (see fig. 2). Late Pleistocene to recent deposition along major river and stream valleys also represents a significant accumulation of these sands. In Walton County, the Choctawhatchee River Valley in the southeastern part of the county is the major river system (see fig. 1).

The reworked terrace and fluvial sands are predominately an unconsolidated body of white to light gray, medium grained quartz sands. Accessory minerals, generally in amounts less than 1 percent, include various heavy minerals, mica, and phosphorite. Clay lenses are sometimes encountered, associated with occasional shell beds.

Natural Resources

Soil is one of the main natural resources in Walton County. More than a third of the soils in the county are used for crops and pasture grasses. The long growing season, favorable climate, and adequate water supply all help make this county good for farming.

Water is also a very important natural resource in Walton County *(12)*. Many perennial streams throughout the county offer a wide variety of recreational activities and also have high potential for industrial uses. On many farms that do not have adequate surface water, earthfill ponds provide water for livestock and for boating and fishing. The two major aquifers in Walton County are the Sand-and-Gravel Aquifer and the Floridan Aquifer. The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CITRONELLE FORMATION
CITRONELLE FORMATION
ALUM
BLUFF
GROUP
UNDIFF
CHATTAHOOCHEE / CHICKASAWHAY
LIMESTONE
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Figure 3.—Geologic cross sections of Walton County, Florida.

Sand-and-Gravel Aquifer supplies some water for rural domestic use. It also stores water, maintains streamflow, and is a source of recharge to the Floridan Aquifer. The Floridan Aquifer underlies all of Walton County. Most of the water for domestic and industrial uses comes from wells dug into this aquifer. The aquifer discharges through springs and seeps along the Choctawhatchee River and by leakage to the bay and gulf, and by wells.

Forestry and forest products are important in Walton County (fig. 4). Much of the county remains in woodland, which continues to be one of the major natural resources.

Other natural resources of the county include beaches, sand, and soil material suitable for road construction.

The natural resources in Walton county can be developed in an orderly manner. Good management, proper use, and wise construction are needed to preserve the resources for the future.

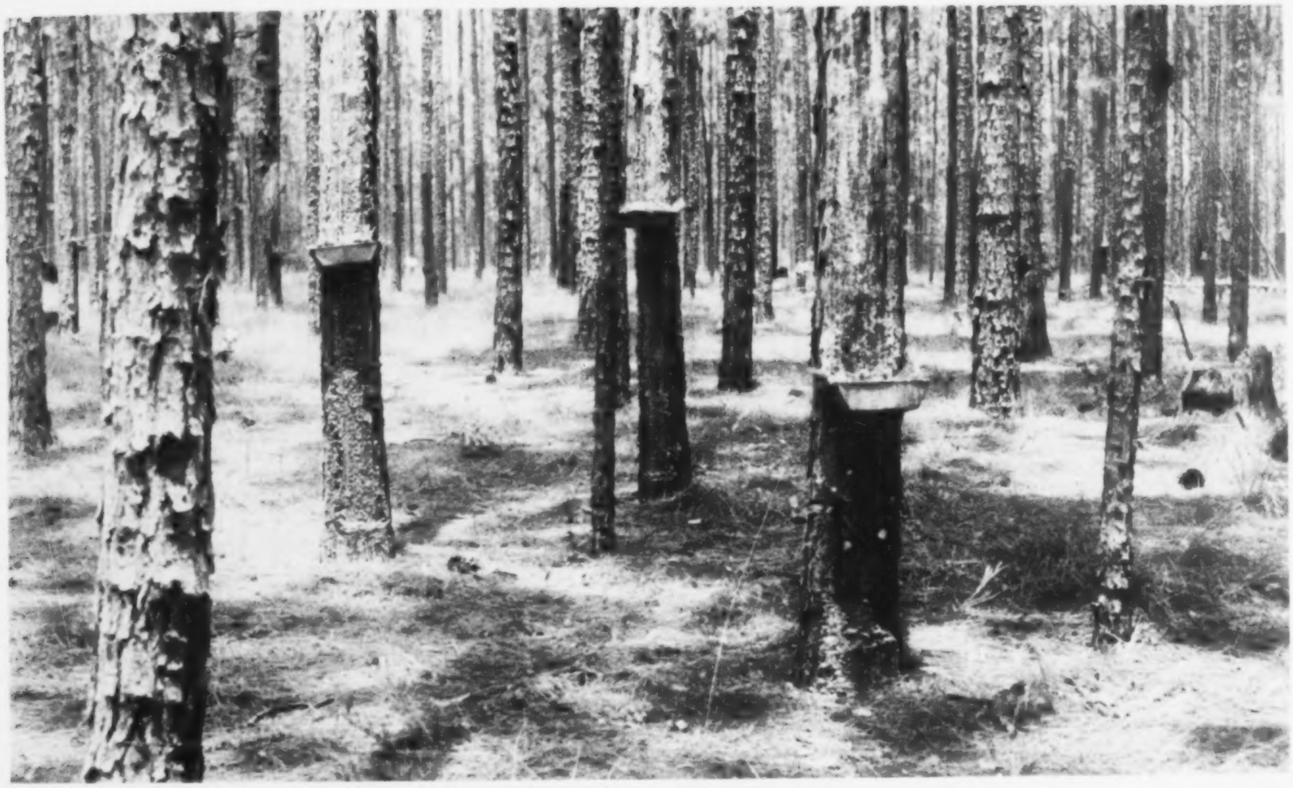

Figure 4.—Turpentine is one of several wood products produced in Walton County. These pines are on Dothan loamy sand, 2 to 5 percent slopes.

Farming

Walton County is mainly a general farming area, and the capability of many of the soils, the climate, and present economic conditions indicate that farming will continue to be important. The principal crops are soybeans, corn, peanuts, cotton, and small grains. Small acreages of truck crops, muscadine grapes, and pecans are also grown. Most of the cropland is in the northern part of the county north of U.S. Highway 90. Livestock production also contributes to the farming industry of the county. Cattle, hogs, and poultry are the main livestock.

About 120,000 acres, or 18 percent of Walton County, is in crops and pasture. About 75 percent is cropland and 25 percent is pasture. The main pasture grasses used for livestock grazing and hay are bahiagrass and coastal bermudagrass (fig. 5).

Much of the cropland is subject to water and wind erosion. The soils in the county are some of the best in Florida for farming, but because of their susceptibility to erosion, terraces, no-till farming, gully control structures, grassed waterways, and permanent vegetation are necessary for maximum protection.

The Choctawhatchee River Soil and Water Conservation District was organized in March 1940 to provide an organized plan for assisting farmers, land users, and public agencies with problems related to soil and water conservation. It was the second district in the state.

Recreation

A variety of recreation activities is available in Walton County including fishing, camping, hunting, swimming, sunbathing, hiking, surfing, boating, golfing, water skiing, canoeing, cave diving, and horseback riding. Grayton Beach and Basin Bayou State Recreation Parks provide swimming, sunbathing, picnicking, hiking, boating, and camping. Eden State Ornamental Garden is a historical location. Point Washington and Eglin Wildlife Management Areas are used by hunters as well as for camping, hiking, boating, and picnicking.

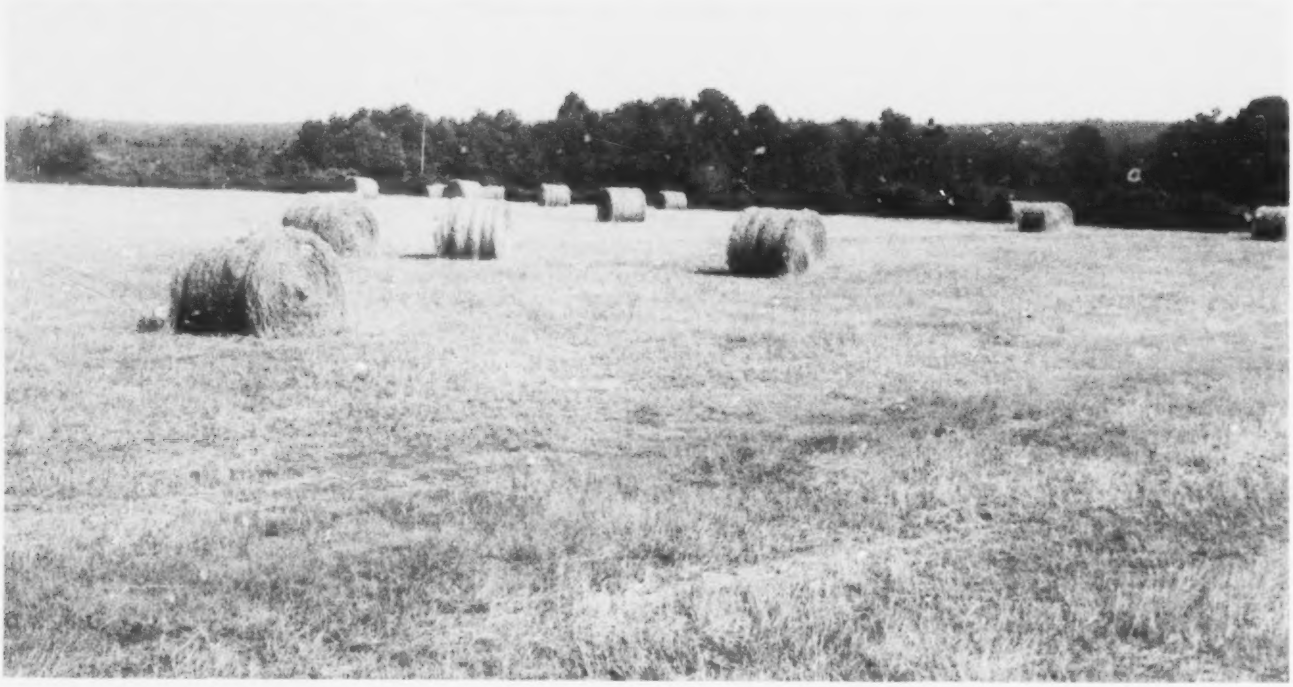

Figure 5.—Hay yields of improved bermudagrass are high in this area of Dothan loamy sand, 2 to 5 percent slopes.

Choctawhatchee River and Bay provide fishing and boating. Juniper Lake, Spring Lake, Black Creek, Smokehouse Lake, Kings Lake, Lake Jackson, Holley Lake, Bishop Lake, and many small farm ponds are also used for fishing. Fish caught include bass, bluegill, shellcracker, and catfish.

The Boy Scouts, Girl Scouts, 4-H Club, and YMCA maintain district camps in Walton County.

The southern part of Walton County lies in what is commonly known as the Miracle Strip. This 24-mile stretch of white beaches is used by swimmers and sunbathers, and fishing is also available (fig. 6). Resorts, camping areas, and golf courses are also along this area.

Transportation

Walton County has five primary arteries for automobile travel. U.S. Highway 331 extends in a north-south direction. U.S. Highway 90, Interstate 10, Florida Highway 20, and U.S. Highway 98 are in an east-west direction. U.S. Highway 90 (Old Spanish Trail) and Interstate 10 go through the center of the county. Florida Highway 20 is north of Choctawhatchee Bay and U.S. Highway 98 is along the coast. Many small roads and highways are throughout the county.

Railroad service is provided by Seaboard Chessie System Railroad (formerly Louisville and Nashville Railroad). The railroad is located between Interstate 10 and U.S. Highway 90. Air Service is provided in the county by DeFuniak Springs Municipal Airport. Barge lines serve Walton County from the port of Freeport. Bus service is provided to DeFuniak Springs along U.S. Highway 90.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; and the kinds of crops and native plants growing on the soils. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils

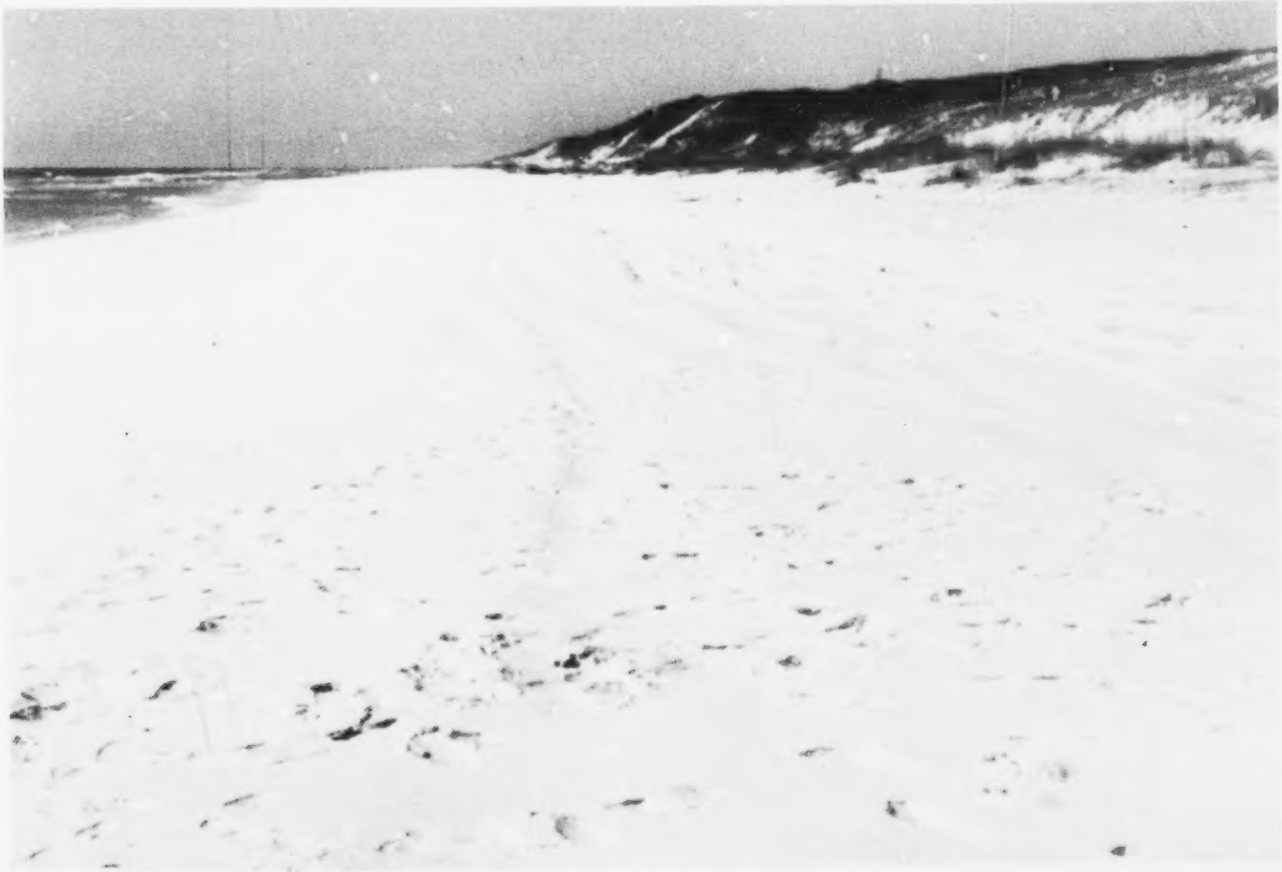

Figure 6.—Many beaches along the Gulf Coast are used for recreation. Seaoats protect the dunes from erosion. The dunes are Newhan-Corolla sands, rolling.

in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed, and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, drainage, and other characteristics that affect management.

Each map unit is rated for *cultivated crops, specialty crops, woodland, urban uses,* and *recreation areas*. Cultivated crops are those grown extensively in the survey area. Specialty crops are the vegetables and fruits that generally require intensive management. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreation areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreation areas are those used for nature study and as wilderness.

Excessively Drained and Well Drained Soils That are Droughty

This group consists mainly of soils that are excessively drained and well drained, nearly level to steep. These soils are sandy throughout, or they are sandy to a depth of 40 to 79 inches and are loamy below that. They are in the south-central part of the county.

1. Lakeland

Nearly level to steep, excessively drained soils that are sandy throughout

This map unit is primarily in the central and southwestern part of Walton County. A large part is on Eglin Air Force Base and extends to DeFuniak Springs and Red Bay. This map unit consists of broad areas of nearly level sandhills interspersed with long, narrow bottom lands surrounded by gently sloping to steep side slopes.

This map unit makes up about 180,981 acres, or about 27 percent of the county. It is 90 percent Lakeland soils and 10 percent soils of minor extent.

Lakeland soils are excessively drained. Typically, the surface layer is dark grayish brown sand 4 inches thick. It is underlain by yellowish brown, brownish yellow, and light yellowish brown sand.

Of minor extent in this map unit are the Eglin, Troup, Foxworth, Albany, Chipley, Dorovan, Pamlico, and Rutlege soils. Eglin soils are somewhat excessively drained, and Troup soils are well drained. Foxworth soils are moderately well drained. Albany and Chipley soils are somewhat poorly drained. Dorovan, Pamlico, and Rutlege soils are very poorly drained.

The soils of this map unit are used mostly for natural vegetation of turkey oak, live oak, longleaf pine, sand pine, and wiregrass. In a few areas, they are used for urban development.

These soils are poorly suited to cultivated crops because of low available water capacity and steepness of slope. They are moderately suited to use as pasture or woodland but the low available water capacity is a limitation. In most areas, the soils are well suited to development of recreation sites and to urban uses.

2. Bonifay-Troup

Nearly level to strongly sloping, well drained soils that are sandy to a depth of 40 inches or more and have a loamy subsoil

This map unit is around the drainage system of Shoal River and Sandy Creek in the central part of the county. Some small areas of this map unit are on Eglin Air Force Base. The map unit consists of nearly level ridges and gently sloping to strongly sloping side slopes interspersed with long, narrow bottom lands. The Troup soils are generally on slightly higher landscape positions than the Bonifay soils.

This map unit makes up about 79,993 acres, or about 12 percent of the county. It is about 18 percent Bonifay soils, 16 percent Troup soils, and 66 percent soils of minor extent.

Bonifay soils are well drained. Typically, the surface layer is very dark grayish brown loamy sand 7 inches thick. The subsurface layer to a depth of 44 inches is yellowish brown and brownish yellow loamy sand. The subsoil to a depth of at least 80 inches is yellowish brown and brownish yellow sandy loam that has plinthite.

Troup soils are well drained. Typically, the surface layer is dark grayish brown sand 7 inches thick. The subsurface layer to a depth of 51 inches is yellowish brown, strong brown, and yellowish red sand and loamy sand. The subsoil is red fine sandy loam and sandy clay loam to a depth of at least 80 inches.

Of minor extent in this map unit are the Fuquay, Lucy, Blanton, Pactolus, Albany, Bibb, Kinston, Johnston, Dorovan, Pamlico, and Rutlege soils. Fuquay and Lucy soils are well drained, and Blanton and Pactolus soils are moderately well drained. Albany soils are somewhat poorly drained. Bibb and Kinston soils are poorly drained. Johnston, Dorovan, Pamlico, and Rutlege soils are very poorly drained.

The soils of this map unit are used mainly for natural stands of turkey oak, live oak, or longleaf pine. In some areas, these trees have been cut and chopped, and slash pines have been planted.

These soils are poorly suited to cultivated crops and pasture because of the low available water capacity. They are moderately well suited to use as woodland. In most areas, the soils are well suited to development of recreation sites and to urban uses. Albany, Blanton, and Pactolus soils are limited for these uses because of wetness.

3. Kureb-Lakeland-Newhan

Nearly level to very steep, excessively drained soils that are sandy throughout

This map unit borders the Gulf of Mexico. Newhan soils are the sand dunes just back of the beaches. Kureb soils are inland from the Newhan soils, and Lakeland soils are the most inland.

This map unit makes up about 6,475 acres, or about 1 percent of the county. It is about 54 percent Kureb soils, 14 percent Lakeland soils, 6 percent Newhan soils, and 26 percent soils of minor extent.

Typically, Kureb soils have a surface layer of gray sand 4 inches thick. The subsurface is white sand to a depth of 17 inches. The subsoil extends to a depth of 68 inches. In the upper part, it is brownish yellow sand that has tongues of white, and below that, it is yellowish brown, brownish yellow, and yellow sand. The substratum is very pale brown sand.

Typically, Lakeland soils have a surface layer of dark grayish brown sand 4 inches thick. Below that is yellowish brown, brownish yellow, and light yellowish brown sand.

Typically, Newhan soils have a surface layer of light gray sand 5 inches thick underlain by white sand.

Of minor extent in this map unit are the Foxworth, Resota, Chipley, Corolla, Hurricane, and Mandarin soils, and Beaches. Foxworth and Resota soils are moderately well drained, and Chipley, Corolla, Hurricane, and Mandarin soils are somewhat poorly drained.

The soils of this map unit are used mostly for live oak, sand pine, and scrub oak. Very little vegetation is on the Newhan soils, and vegetation is stunted on the Kureb soils. The Lakeland soils have a good growth of sand pine. Some areas of this map unit near the Gulf of Mexico are in urban uses.

These soils are poorly suited to cultivated crops, pasture, and woodland because of the low available water capacity. In most areas, they are well suited to development of recreation sites and urban uses. Wetness is a limitation in some areas that include the Chipley, Foxworth, Hurricane, and Resota soils.

Well Drained Soils That Have a Loamy Subsoil

This group consists mainly of highly dissected soils that are well drained, nearly level to strongly sloping, and have a loamy subsoil. Some of these soils have a loamy surface layer underlain by a loamy subsoil; some have a surface layer of loamy sand 20 to 40 inches thick underlain by a loamy subsoil; some have a surface layer of sand and loamy sand 40 to 80 inches thick underlain by a loamy subsoil; and others have a loamy surface layer underlain by a clayey subsoil.

This group of soils is north of U.S. Highway 90 in the Eucheeanna and Alaqua Valleys.

4. Fuquay-Dothan-Troup

Nearly level to sloping, well drained, sandy soils that have a loamy subsoil at various depths

This map unit is in woodland and cultivated farmland in the northern part of Walton County. The soils are undulating.

This map unit makes up about 114,139 acres, or about 17 percent of the county. It is about 20 percent Fuquay soils, 16 percent Dothan soils, 13 percent Troup soils, and 51 percent soils of minor extent.

Typically, Fuquay soils have a surface layer of dark grayish brown loamy sand 5 inches thick. The subsurface layer is yellowish brown loamy sand that extends to a depth of 26 inches. The subsoil is yellowish brown and brownish yellow sandy loam that has plinthite.

Typically, Dothan soils have a surface layer of very dark grayish brown loamy sand 8 inches thick. The subsoil extends to a depth of 80 inches or more. It is yellowish brown sandy loam in the upper part, and in the middle part, it is yellowish brown and brownish yellow sandy clay loam that has plinthite. The lower part of the subsoil is mottled brownish yellow, strong brown, light gray, yellowish red, and red sandy loam.

Typically, Troup soils have a surface layer of dark grayish brown sand 7 inches thick. The subsurface layer to a depth of 51 inches is yellowish brown sand in the upper part and strong brown and yellowish red loamy sand in the lower part. The subsoil is red fine sandy loam and sandy clay loam.

Of minor extent in this map unit are the Bonifay, Lucy, Orangeburg, Tifton, Blanton, Pactolus, Stilson, Albany, Escambia, Florala, Leefield, Bibb, Kinston, Johnston, and Pantego soils. The Bonifay, Lucy, Orangeburg, and Tifton soils are well drained; the Blanton, Pactolus, and Stilson soils, are moderately well drained; the Albany, Escambia, Florala, and Leefield soils are somewhat poorly drained; and the Bibb, Kinston, Johnston, and Pantego soils are poorly drained.

The soils of this map unit are used mostly for forest of longleaf and slash pine. In many areas, the soils are used for row crops and pasture. The wetter minor soils are used mainly for pasture.

These soils are moderately well suited to crops because of low to medium available water capacity. They are well suited to use as pasture. Good management, including terraces on slopes, helps control erosion on land cleared for farming. Under such management, these soils are highly productive.

These soils are well suited to use as woodland and habitat for wildlife and to recreation uses. Wetness is a concern in areas of minor soils. The soils are highly erodible where slope is more than 5 percent.

These soils are moderately well suited to urban development. They are only moderately suited to use for sanitary facilities. Septic tank absorption fields need to be enlarged to compensate for the soils that restrict movement of effluent.

5. Malbis-Fuquay

Nearly level to sloping, moderately well drained and well drained, loamy and sandy soils that have a loamy subsoil at a depth of less than 20 inches or at a depth of 20 to 40 inches

This map unit is in the northwestern part of the county. The soils are undulating.

This map unit covers about 26,786 acres, or about 4 percent of the county. It is about 50 percent Malbis soils, 21 percent Fuquay soils, and 29 percent soils of minor extent.

Typically, Malbis soils have a surface layer of dark grayish brown fine sandy loam 6 inches thick. The subsoil is brownish yellow, yellowish brown, and strong brown fine sandy loam and sandy clay loam. It has high silt content and plinthite.

Typically, Fuquay soils have a surface layer of dark grayish brown loamy sand 5 inches thick. The subsurface is yellowish brown loamy sand to a depth of 26 inches. The subsoil is yellowish brown and brownish yellow fine sandy loam that has plinthite.

Of minor extent in this map unit are the Bonifay, Stilson, Escambia, Leefield, Bibb, Kinston, Pantego, and Johnston soils. Bonifay soils are well drained, and Stilson soils are moderately well drained. Escambia and Leefield soils are somewhat poorly drained. Bibb and Kinston soils are poorly drained. Pantego and Johnston soils are very poorly drained.

The soils of this map unit are used for cultivated crops. In some areas, they are planted to slash pine.

These soils have few limitations for any use and generally need only simple management. They are well suited to cultivated crops. Nearly all of the acreage has been cleared and is farmed extensively. These soils are well suited to use as woodland and pasture and to most urban development. They are moderately well suited to sanitary facilities. Septic tank absorption fields need to be enlarged to compensate for the slower movement of effluent through the soil.

6. Norfolk-Shubuta-Bonneau

Nearly level to strongly sloping, well drained, sandy and loamy soils that have a loamy or clayey subsoil at a depth of 20 to 40 inches

This map unit is in the Eucheeanna and Alaqua Valleys and south of DeFuniak Springs. It includes the watershed of Alaqua Creek and Bruce Creek and some of Sandy Creek.

This map unit makes up about 70,045 acres, or about 10 percent of the county. It is about 19 percent Norfolk soils, 10 percent Shubuta soils, 17 percent Bonneau soils, and 54 percent soils of minor extent.

Typically, Norfolk soils have a surface layer of dark grayish brown loamy sand 5 inches thick. The subsurface layer to a depth of 15 inches is yellowish brown loamy sand. The subsoil to a depth of 62 inches is brownish yellow sandy loam and sandy clay loam. The substratum is reticulately mottled sandy loam.

Typically, Shubuta soils have a surface layer of very dark grayish brown fine sandy loam 6 inches thick. The subsurface layer to a depth of 11 inches is dark brown fine sandy loam. The subsoil is yellowish red and red clay to a depth of at least 80 inches.

Typically, Bonneau soils have a surface layer of dark grayish brown loamy sand 5 inches thick. The subsurface layer to a depth of 25 inches is yellowish brown and light brownish yellow loamy sand. The subsoil is brownish yellow and strong brown sandy loam and sandy clay loam to a depth of 68 inches. The substratum is reticulately mottled fine sandy loam.

Of minor extent in this map unit are the Lakeland, Bonifay, Fuquay, Lucy, Troup, Orangeburg, Blanton, Angie, Florala, Bibb, Kinston, and Johnston soils. Lakeland soils are excessively drained. Bonifay, Fuquay, Lucy, Troup, and Orangeburg soils are well drained. Blanton soils are moderately well drained, and Angie and Florala soils are somewhat poorly drained. Bibb and Kinston soils are poorly drained, and Johnston soils are very poorly drained.

The soils of this map unit are used for forest of longleaf, slash pine, and loblolly pines. In some areas, they are used for pasture.

These soils are well suited to use for crops and pasture. Good management and terraces constructed where slope is a limitation reduce erosion on land cleared for farming. Under such management, these soils are highly productive.

The soils of this map unit are well suited to use as woodland, wildlife habitat, and recreation. The major soils are highly erodible where slope is more than 5 percent.

These soils are well suited to most urban development. They are moderately suited to sanitary facilities; however, absorption fields need to be greatly enlarged to compensate for the very slow movement of effluent through the Shubuta and Angie soils.

Moderately Well Drained to Very Poorly Drained Soils That are Mucky, Sandy, or Loamy

This group consists of soils that are moderately well drained to very poorly drained and level. They are organic and sandy soils, and all the soils are sandy or loamy in some part at a depth of at least 60 inches. These soils are in the southern part of the county.

7. Hurricane-Pamlico

Nearly level to gently sloping, somewhat poorly drained to very poorly drained soils; some are organic underlain by sandy material, and others are sandy throughout

This map unit is in broad flatwoods interspersed with cypress ponds between the Choctawhatchee River and Gulf of Mexico. Hurricane soils are on flatwoods, and Pamlico soils are in the cypress ponds.

This map unit makes up about 23,870 acres, or 4 percent of the county. It is about 36 percent Hurricane soils, 22 percent Pamlico soils, and 42 percent soils of minor extent.

Hurricane soils are somewhat poorly drained. Typically, the surface layer is very dark gray sand 5 inches thick. The subsurface layer to a depth of 63 inches is brown, yellowish brown, brownish yellow, and white sand. The subsoil is black sand to a depth of at least 80 inches.

Pamlico soils are very poorly drained. Typically, they are muck to a depth of 30 inches and are underlain by sand to a depth of at least 80 inches.

Of minor extent in this map unit are the Lakeland, Foxworth, Resota, Chipley, Mandarin, Leon, Dorovan, Pickney, and Rutlege soils. Lakeland soils are excessively drained. Foxworth and Resota soils are moderately well drained. Chipley and Mandarin soils are somewhat poorly drained, and Leon soils are poorly drained. Dorovan, Pickney, and Rutlege soils are very poorly drained.

The soils of this unit are used mainly for natural vegetation. In some areas, they are planted to slash pine. Natural vegetation on Hurricane soils is mostly slash pine, longleaf pine, turkey oak, post oak, yaupon, gallberry, and pineland threeawn (wiregrass). On Pamlico soils, it is swamp cyrilla, greenbrier, baldcypress, and sweetbay.

These soils are poorly suited to crops. Hurricane soils are moderately well suited to the commonly grown grasses, such as Pensacola bahiagrass and coastal bermudagrass. These grasses grow well if properly managed. Controlled grazing helps maintain good ground cover and vigorous plant growth. Regular applications of lime and fertilizer are also needed. Drainage is required in places to remove water from the minor soils that are wet for long periods. Pamlico soils are not suited to use for the production of these grasses.

Hurricane soils are moderately well suited to use as woodland. Slash and longleaf pine grow well. Good management ensures high production. Pamlico soils are not suited to use for pines.

Hurricane soils are moderately suited to urban and recreation uses, but Pamlico soils are not suited. The high water table limits the effectiveness of septic tanks.

8. Chipley-Foxworth-Albany

Nearly level to gently sloping, somewhat poorly drained or moderately well drained soils; some are sandy throughout, and others are sandy and have a loamy subsoil below a depth of 40 inches

This map unit consists of soils in broad, flat areas that are normally wet during most years. These areas are just north of the Choctawhatchee River and Bay and are lower than the surrounding areas of soils in other map units.

This map unit makes about 48,809 acres, or 7 percent of the county. It is about 20 percent Chipley soils, 14 percent Foxworth soils, 12 percent Albany soils, and 54 percent soils of minor extent.

Chipley soils are somewhat poorly drained. Typically, the surface layer is dark gray sand 6 inches thick. The underlying material is yellowish brown, light yellowish brown, very pale brown, and light gray sand.

Foxworth soils are moderately well drained. They are in higher positions than the Chipley and Albany soils. Typically, the surface layer is grayish brown and brown sand 7 inches thick. The underlying material is yellowish brown, brownish yellow, yellow, very pale brown, and light gray sand.

Albany soils are somewhat poorly drained. Typically, the surface layer is very dark gray and dark grayish brown loamy sand 11 inches thick. The subsurface to a depth of 45 inches is yellowish brown loamy sand. The subsoil is yellowish brown and light yellowish brown sandy loam to a depth of at least 80 inches.

Of minor extent in this map unit are the Lakeland, Eglin, Bonifay, Blanton, Stilson, Leefield, Garcon, Bibb, Kinston, Dorovan, Pamlico, Pantego, Johnston, and Rutlege soils. Lakeland soils are excessively drained, and Eglin soils are somewhat excessively drained. Bonifay soils are well drained, and Blanton and Stilson soils are moderately well drained. Leefield and Garcon soils are somewhat poorly drained. Bibb and Kinston are poorly drained, and Dorovan, Pamlico, Pantego, Johnston, and Rutlege soils are very poorly drained.

The soils of this map unit are used mainly for natural vegetation mostly of pineland threeawn (wiregrass), gallberry, yaupon, and longleaf pine. In many areas, they are bedded and planted to slash pines.

These soils are poorly suited to crops because of wetness. They are moderately suited to pastures of Pensacola bahiagrass and coastal bermudagrass. The grasses grow well if properly managed. Controlled grazing helps maintain good ground cover and vigorous plant growth. Regular applications of lime and fertilizer are also needed. Drainage is required to remove surface water from the minor soils that are wet for long periods.

The soils of this unit are moderately suited to use as woodland. Slash and longleaf pine grow well.

These soils are poorly suited to recreation and urban uses because of wetness.

9. Rutlege-Leon

Nearly level, very poorly drained and poorly drained soils that are sandy throughout

This map unit consists of soils in broad flatwoods south of the Choctawhatchee Bay.

This map unit makes up about 27,917 acres, or 4 percent of the county. It is about 56 percent Rutlege soils, 23 percent Leon soils, and 21 percent soils of minor extent.

Rutlege soils are very poorly drained. Typically, the surface layer is black fine sand 17 inches thick. The underlying material is grayish brown, light brownish gray, and light gray fine sand.

Leon soils are poorly drained. Typically, the surface layer is very dark gray sand 9 inches thick. The subsurface to a depth of 18 inches is gray sand. The subsoil is dark reddish brown, black, and yellowish brown sand and loamy sand. Below that are white and very dark gray sand.

Of minor extent in this map unit are the Resota, Hurricane, Mandarin, Dorovan, and Pamlico soils. Resota soils are moderately well drained. Hurricane and Mandarin soils are somewhat poorly drained. Dorovan and Pamlico soils are very poorly drained.

The soils of this map unit are used for natural vegetation mostly of longleaf pine, gallberry, yaupon, and palmetto. In some areas, they are planted to slash pine.

These soils are not suited to crops because of excessive wetness. They are poorly suited to use as pasture only if water control measures are used to remove excess water. Outlets are generally inadequate, and these soils are seldom used as pasture.

These soils are moderately suited to use as woodland. The soils need to be bedded and drained.

These soils are not suited to recreation and urban uses because of excessive wetness.

10. Leon-Pamlico

Level, poorly drained and very poorly drained soils, some are sandy throughout, and others are muck underlain by sandy material

This map unit consists of soils in broad flatwoods interspersed with cypress ponds between the Choctawhatchee Bay and Gulf of Mexico. It borders Bay County. Leon soils are in the flatwoods, and Pamlico soils are in the cypress ponds.

This map unit makes up about 7,987 acres, or 1 percent of the county It is about 42 percent Leon soils, 22 percent Pamlico soils, and 36 percent soils of minor extent.

Leon soils are poorly drained. Typically, the surface layer is very dark gray sand 9 inches thick. The subsurface layer to a depth of 18 inches is gray sand. The subsoil is dark reddish brown, black, and yellowish brown sand and loamy sand. Below that are white and very dark gray sand.

Pamlico soils are very poorly drained. Typically, they are muck to a depth of 30 inches and are underlain by sand to a depth of at least 80 inches.

Of minor extend in this map unit are the Hurricane, Mandarin, Dorovan, and Rutlege soils. Hurricane and Mandarin soils are somewhat poorly drained. Dorovan and Rutlege soils are very poorly drained.

The soils of this map unit are used for natural vegetation mostly of longleaf pine, gallberry, yaupon, and palmetto on flatwoods. In some areas, they are planted to slash pine. Cypress, swamp cyrilla, greenbrier, and sweetbay are the natural vegetation in the ponds.

These soils are not suited to crops because of wetness. They are poorly suited to use as pasture only if water control measures are used to remove excess water. Outlets are generally inadequate.

These soils are moderately suited to use as woodland. The soils need to be bedded and drained.

These soils are poorly suited to recreation and urban uses because of wetness.

Somewhat Poorly Drained to Very Poorly Drained Soils That are Subject to Flooding or Ponding

This group consists of soils that are level. Most of these soils have a high water table dominately just below or above the surface most of the year. Some of these soils are sandy and mucky at the surface; the muck can extend to a depth of more than 5 feet. Other soils in this group are somewhat poorly drained and have a loamy subsoil. These soils are on stream terraces. Some soils have a high sulfur content and a high content of organic matter in the upper 3 or 4 feet and are underlain by sand or clay. Also in this group are soils on the alluvial flood plain. These soils are loamy and are underlain by sand.

11. Garcon

Level, somewhat poorly drained soils that are sandy to a depth of 20 to 40 inches and have a loamy subsoil

This map unit consists of soils on stream terraces along the Choctawhatchee River. These soils are lower than the uplands and are sometimes flooded.

This map unit makes up about 5,105 acres, or about 1 percent of the county. It is about 54 percent Garcon soils and 46 percent soils of minor extent.

Typically, Garcon soils have a surface layer of very dark gray and dark grayish brown loamy fine sand 6 inches thick. The subsurface layer is yellowish brown and brownish yellow loamy fine sand to a depth of 25 inches. The subsoil to a depth of 49 inches is brownish yellow, light yellowish brown, and light gray fine sandy loam and loamy fine sand. The substratum is white fine sand.

Of minor extent in this map unit are the Bigbee, Bonneau, Kenansville, Bibb, Kinston, and Johnston soils. Bigbee soils are excessively drained. Bonneau and Kenansville soils are well drained. Bibb and Kinston soils are poorly drained, and Johnston soils are very poorly drained.

The vegetation on the soils of this map unit has been cleared, cut over, and chopped. The soils have been bedded and planted to slash pines.

The soils of this map unit are moderately suited to use for crops and pasture. Wetness and the hazard of flooding by stream overflow are the major limitations.

These soils are moderately well suited to use as woodland. Bedding is necessary for good pine growth.

These soils are poorly suited to recreation and urban uses because of wetness and flooding.

12. Kinston-Bibb

Level, poorly drained soils that are stratified loamy and sandy material

This map unit consists of soils in swamps and on flood plains throughout Walton County. These soils are often flooded.

This map unit makes up 35,240 acres, or about 5 percent of the county. It is about 45 percent Kinston soils, 34 percent Bibb soils, and 21 percent soils of minor extent.

Typically, Kinston soils have a surface layer of very dark gray loam 6 inches thick. The underlying material extends to a depth of at least 80 inches. It is dark grayish brown sandy clay loam to a depth of 35 inches and light brownish gray sandy clay loam to a depth of 42 inches. It is light gray sand to a depth of 48 inches and light gray clay loam below that. Since these soils are generally on flood plains, the thickness of the loamy and sandy layers varies considerably.

Bibb soils are poorly drained. They are stratified sandy and loamy material throughout. The loamy material is loam, sandy loam, fine sandy loam, or silt loam. Since these soils are on flood plains, thickness of the loamy and sandy layers varies considerably.

Of minor extent in this map unit are the Bigbee, Garcon, Dorovan, Pamlico, Pantego, and Johnston soils. Bigbee soils are excessively drained, and Garcon soils are somewhat poorly drained. Dorovan, Pamlico, Pantego, and Johnston soils are very poorly drained.

The soils of this map unit are used for natural vegetation mostly of mixed hardwoods and a few scattered pine.

These soils are not suited to crops or pasture, and they are not used for crops.

These soils are poorly suited to use as woodland. They are not suited to urban or recreation uses. Wetness and the hazard of flooding are severe limitations that are not practical to overcome.

13. Dorovan-Pamlico

Nearly level, very poorly drained, deep, mucky soils and mucky soils that are underlain by sandy material

This map unit consists mainly of soils in large bays and swamps in the northern part of the county and along flood plains in the sandhills mostly on Eglin Air Force Base. Dorovan soils are mainly toward the center of the areas and Pamlico soils are closer to the outer edges. These soils are often flooded.

This map unit makes up about 25,126 acres, or about 4 percent of the county. It is about 65 percent Dorovan soils, 20 percent Pamlico soils, and 15 percent soils of minor extent.

Dorovan soils are muck to a depth of at least 51 inches and are underlain by sandy material.

Typically, Pamlico soils are muck to a depth of 30 inches and are underlain by sand to a depth of at least 80 inches.

Of minor extent in this map unit are the Pactolus, Albany, Bibb, Kinston, and Johnston soils. Pactolus soils are moderately well drained, and Albany soils are somewhat poorly drained. Bibb and Kinston soils are poorly drained, and Johnston soils are very poorly drained.

All soils of this map unit are in swamps and are undrained. Natural vegetation is swamp cyrilla, scattered longleaf pine, and mixed hardwoods.

These soils are not suited to crops or pasture because of wetness and flooding. They are poorly suited to urban and recreation uses because of low strength, wetness, and flooding.

14. Maurepas-Dirego

Nearly level, very poorly drained, deep, mucky soils and mucky soils that are underlain by sandy material

This map unit consists of Maurepas soils in the mouth of the Choctawhatchee River and Dirego soils in the salt marshes. The mouth of the Choctawhatchee River is thoroughly dissected by numerous small bayous and streams. These soils are often flooded.

This map unit makes up about 16,297 acres, or about 3 percent of the county. It is about 51 percent Maurepas soils, 11 percent Dirego soils, and 38 percent soils of minor extent.

Maurepas soils are in low areas and are wet. Typically, they are muck to a depth of at least 65 inches.

Typically, Dirego soils are muck to a depth of 48 inches and are underlain by sand to a depth of at least 65 inches. These soils have high salt and sulfur content.

Of minor extent in this map unit are the Bibb and Kinston soils. These soils are poorly drained.

All soils of this map unit are in swamps and are undrained. Natural vegetation on the Maurepas soils is mostly blackgum and cypress, and on the Dirego soils mainly cordgrasses and needlerushes.

These soils are not suited to crops, pasture, woodland, recreation, or urban uses because of excess wetness, flooding, and low strength.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Dothan loamy sand, 2 to 5 percent slopes, is one of several phases in the Dothan series.

Some map units are made up of two or more major soils. These map units are called soil complexes, soil associations, or undifferentiated groups.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes, is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Kinston-Bibb association, frequently flooded, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations and capabilities for many uses. The Glossary defines many of the terms used in describing the soils.

1—Albany-Pactolus loamy sands, 0 to 5 percent slopes. This map unit consists of somewhat poorly drained Albany soils and moderately well drained Pactolus soils. Areas of these soils are too intricately mixed or too small to be mapped separately at the selected scale. These soils are nearly level to gently sloping. They are on seepage slopes and low flats on uplands. Areas of this map unit range from 3 to 30 acres. Individual areas of soils within the map unit range from 1 acre to 5 acres.

Albany soil makes up about 55 to 70 percent of the map unit. Typically, the surface layer is loamy sand to a depth of 11 inches. It is very dark gray to a depth of 7 inches and dark grayish brown below that. The subsurface layer is yellowish brown loamy sand to a depth of 45 inches. The subsoil is yellowish brown and light yellowish brown sandy loam to a depth of at least 80 inches.

This Albany soil has a water table within 12 to 30 inches of the surface for 1 to 4 months annually. The available water capacity is very low in the surface layer, moderate or low in the subsurface layer, and moderate or high in the subsoil. Permeability is rapid to moderately rapid in the surface and subsurface layers and moderate to moderately slow in the subsoil. Internal drainage is slow when impeded by the high water table. Response to artificial drainage is moderately rapid. The organic matter content is low.

Pactolus soil makes up 30 to 45 percent of the map unit. Typically, the surface layer is loamy sand 12 inches thick. It is black to a depth of 6 inches and dark grayish brown below that. The underlying material is brownish yellow loamy sand to a depth of 28 inches and brownish yellow and yellowish brown sand to a depth of at least 80 inches.

This Pactolus soil has a high water table within 18 to 30 inches of the surface for 1 to 4 months annually. The available water capacity is low. Permeability is rapid. The organic matter content is low or moderately low. Response to artificial drainage is rapid.

Included with these soils in mapping are Blanton, Bonifay, Chipley, Escambia, Leefield, and Stilson soils. Also included are soils similar to the Albany and Pactolus soils except they have more than 5 percent plinthite in the subsoil, have slope ranging from 5 to 8 percent, or they are poorly drained. Soils similar to the Albany soil but that have a sand or loamy sand subsoil are also included. The included soils make up about 5 to 15 percent of the map unit.

The natural vegetation is mostly longleaf, loblolly, and slash pine. These pines are intermixed with oaks and other hardwoods and have an understory of gallberry, waxmyrtle, and scattered sawpalmetto. Pitcherplants are in poorly drained areas. The most common native grass is pineland threeawn (wiregrass).

The Albany and Pactolus soils have severe limitations for cultivated crops because of periodic wetness and the thick, sandy surface layer. The variety of adapted crops is very limited unless intensive water control measures are used. With adequate water control, corn, soybeans, and peanuts are moderately adapted. Close-growing cover crops are needed in rotation with row crops. The close-growing crops need to remain on the land at least two-thirds of the time. Cover crops and crop residue left on the soil protect the soil from erosion. Conservation tillage helps conserve moisture and control erosion.

These soils are moderately suited to pasture and hay, but good management is required to produce good yields. Coastal bermudagrass, bahiagrass, and clovers are well adapted. These plants respond well to fertilizers and lime. Simple drainage is needed to remove excess internal water in wet seasons. For best yields, controlled grazing is needed to maintain vigorous plants.

The potential productivity of pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

These soils have moderate limitations for building sites, local roads and streets, and recreational uses because of the seasonal high water table. Wetness is a severe limitation for septic tank absorption fields. Alternative systems or fill can reduce this limitation. Wetness and seepage are severe limitations for sanitary landfills and sewage lagoons. If used for these purposes, the sandy sidewalls need to be sealed.

The Albany and Pactolus soils are in capability subclass IIIe. Albany soil is in woodland suitability group 11W, and Pactolus soil is in 10W.

2—Bonifay loamy sand, 0 to 5 percent slopes. This soil is well drained and nearly level to gently sloping. It is on broad and narrow ridgetops on uplands. Individual areas of this soil range mostly from 15 to more than 100 acres; some areas are as small as 5 acres. Slopes are smooth to convex.

Typically, the surface layer is very dark grayish brown loamy sand 7 inches thick. The subsurface layer is yellowish brown and brownish yellow loamy sand to a depth of 54 inches. The subsoil to a depth of at least 80 inches is yellowish brown and brownish yellow sandy loam that is 10 percent plinthite.

Included with this soil in mapping are small areas of Albany, Blanton, Foxworth, Fuquay, and Troup soils. Also included are a few small areas of soils similar to the Bonifay soil except they have less than 5 percent plinthite within a depth of 60 inches, have more than 5 percent plinthite at a depth of 60 to 70 inches, have a sand surface layer, or have slope of 5 to 8 percent. The included soils make up less than 20 percent of the map unit.

This Bonifay soil has a perched water table at a depth of 48 to 60 inches for brief periods. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is moderately low or moderate. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation consists mostly of slash pine, loblolly pine, and longleaf pine and an understory of blackjack, running oak, turkey oak, and post oak. Pineland threeawn (wiregrass) is the most common native grass.

This Bonifay soil has severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. Row crops need to be planted on the contour in alternating strips with close-growing cover crops. The cover crops need to remain on the land at least two-thirds of the time. Cover crops and crop residue left on the soil protect the soil from erosion. Lime and fertilizer are needed. Irrigation of high-value crops, such as watermelon, is generally feasible where irrigation water is readily available.

This soil is moderately suited to use as improved pasture. Deep-rooting plants, such as coastal bermudagrass and improved bahiagrass, are well adapted. They grow well and produce good ground cover if lime and fertilizer are added to the soil. For maximum yields, controlled grazing is needed to maintain vigorous plants. Yields are occasionally greatly reduced by extended severe droughts.

The potential productivity of pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for use as building sites and for local roads and streets. It has moderate limitations for septic tank absorption fields because of the moderate permeability in the subsoil. Alternative systems or fill can overcome this limitation. This soil has severe limitations for sewage lagoons and sanitary landfills because of seepage. If used for these purposes, the sandy sidewalls need to be sealed.

This soil has moderate limitations for recreational development because of the sandy surface layer. A suitable topsoil or some form of surfacing can reduce or overcome this minor limitation.

This Bonifay soil is in capability subclass IIIs and in woodland suitability group 10S.

3—Bonifay loamy sand, 5 to 8 percent slopes. This soil is well drained and sloping. It is on side slopes on uplands. Individual areas of this soil range mostly from 10 to 60 acres. Slopes are convex to concave.

Typically, the surface layer is gray and grayish brown loamy sand 5 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 48 inches. The subsoil is brownish yellow sandy loam to a depth of 52 inches and brownish yellow sandy clay loam containing plinthite, to a depth of 67 inches. It is yellowish brown sandy loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Albany, Bibb, Blanton, Foxworth, Fuquay, Lakeland, Leefield, Lucy, Pantego, Stilson, and Troup soils. Also included are a few small areas of soils similar to the Bonifay soil except they have less than 5 percent plinthite within a depth of 60 inches, have more than 5 percent plinthite at a depth of 60 to 70 inches, have a sand surface layer, or have slope of 0 to 5 percent or of more than 8 percent. The included soils make up less than 25 percent of the map unit.

This Bonifay soil has a perched water table at a depth of 48 to 60 inches for brief periods. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is moderately low or moderate. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation consists mostly of slash, loblolly, and longleaf pines and an understory of blackjack, turkey, and post oaks. Pineland threeawn (wiregrass) is the most common native grass.

This Bonifay soil has very severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. Row crops need to be planted on the contour in alternating strips with close-growing cover crops. The cover crops need to remain on the land at least three-fourths of the time. Cover crops and crop residue left on the soil protect the soil from erosion. Lime and fertilizer are needed.

This soil is moderately suited to use as improved pasture. Deep-rooting plants, such as coastal bermudagrass and improved bahiagrass, are well adapted. They grow well and produce good ground cover when they are limed and fertilized. For maximum yields, controlled grazing is needed to maintain vigorous plants. Yields are occasionally greatly reduced by extended severe droughts.

The potential productivity of pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for use as building sites and for local roads and streets. It has moderate limitations for septic tank absorption fields because of the moderate permeability in the subsoil. Alternative systems or fill can reduce this limitation. This soil has moderate limitations for small commercial buildings because of slope. Cutting and leveling can overcome this limitation. This soil has severe limitations for sewage lagoons and sanitary landfills because of seepage. If used for these purposes, the sandy sidewalls need to be sealed.

This soil has moderate limitations for recreational development because of the sandy surface. Slope is a moderate limitation for playgrounds.

This Bonifay soil is in capability subclass IVs and in woodland suitability group 10S.

4—Chipley sand, 0 to 5 percent slopes. This soil is somewhat poorly drained and nearly level to gently sloping. It is in areas bordering drainageways on uplands or on low ridges on flatwoods. Individual areas of this soil range from 5 to 200 acres. Slopes are smooth to convex.

Typically, the surface layer is dark gray sand 6 inches thick. The underlying material is sand to a depth of at least 80 inches. It is yellowish brown to a depth of 16 inches, light yellowish brown to a depth of 31 inches, very pale brown to a depth of 45 inches, and light gray below that.

Included with this soil in mapping are small areas of Albany, Blanton, Hurricane, Foxworth, Lakeland, Eglin, Leon, Mandarin, Rutlege, and Troup soils. Also included are a few small areas of poorly drained soils that have a light color surface layer and gray mottles within a depth of 20 inches. Included are areas of soils similar to Chipley soil except they are moderately well drained and have gray mottles within a depth of 40 inches, have 10 to 20 percent silt plus clay between depths of 10 and 40 inches, or they have slope of 5 to 8 percent. The included soils make up less than 20 percent of the map unit.

In most years, this Chipley soil has a high water table between depths of 20 and 40 inches for 2 to 4 months, at a depth of less than 10 inches for less than 1 month and at a depth of more than 40 inches for more than 4 months. The available water capacity is low, and permeability is rapid throughout. The organic matter content is moderate. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation is mostly slash, loblolly, and longleaf pines and a few scattered blackjack, turkey, and post oaks. The understory is greenbriers and gallberry. Pitcherplants are in some poorly drained areas. Pineland threeawn (wiregrass) is the most common native grass. Other grasses include bluestems, low panicums, and purple lovegrass.

This Chipley soil has severe limitations for cultivated crops because of periodic wetness. The variety of adapted crops is very limited unless intensive water control measures are used. If the water control system can remove excess water in wet seasons and provide subsurface irrigation in dry seasons, this soil is well suited to many crops. In addition to water control, crop rotations need to include a close-growing cover crop that remains on the land at least two-thirds of the time. Cover crops and crop residue left on the soil protect the soil from erosion. Fertilizer and lime need to be added according to the needs of the crops.

This soil is moderately well suited to pasture and hay. Coastal bermudagrass and bahiagrass are well adapted. They require simple drainage to remove excess surface water in times of high rainfall. They also require regular use of fertilizers. Some areas respond well to lime. For highest yields, controlled grazing is needed to maintain healthy plants.

The potential productivity of pine trees is high. Equipment use limitations and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has moderate limitations for use as building sites and for local roads and streets because of the high water table during wet periods. It has severe limitations for septic tank absorption fields because of the high water table and poor filtering capacity. Alternative systems can reduce these limitations. This soil has severe limitations for sewage lagoons and sanitary landfills because of seepage and the high water table during wet periods.

This soil has severe limitations for recreational development because the sandy surface causes poor trafficability. A suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Chipley soil is in capability subclass IIIs and in woodland suitability group 11S.

5—Chipley sand, 5 to 8 percent slopes. This soil is somewhat poorly drained and sloping. It borders drainageways on uplands. Individual areas of this soil are irregular in shape and range from about 5 to 20 acres. Slopes are mostly convex but are concave in places.

Typically, the surface layer is dark grayish brown sand 5 inches thick. The underlying material is sand to a depth of at least 80 inches. It is yellowish brown to a depth of 9 inches, and light gray and pale olive below that.

Included with this soil in mapping are small areas of Albany, Blanton, Florala, Foxworth, Lakeland, Leefield, Stilson, and Troup soils. Also included are areas of Chipley soils where the substratum is loamy sand below a depth of 40 inches and areas of similar soils that have slope of less than 5 percent or more than 8 percent. The included soils made up less than 20 percent of the map unit.

This Chipley soil has a high water table between depths of 20 and 40 inches for 2 to 4 months during most years. The available water capacity is low throughout. The organic matter content is moderate. Rainfall is rapidly absorbed, but there is high runoff during heavy rains in unprotected areas.

The natural vegetation is mostly slash, loblolly, and longleaf pines; a few scattered blackjack, turkey, and post oaks; and an understory of greenbriers and gallberry. Pineland threeawn (wiregrass) is the most common native grass. Other grasses include bluestems, low panicums, and purple lovegrass.

This Chipley soil has very severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. The water table limits the depth of the root zone but also provides water through capillary rise to supplement the low available water capacity. In very dry seasons, the high water table drops well below the root zone, and little capillary water is available to plants. Row crops need to be planted on the contour in alternate strips with close-growing crops that need to remain on the land at least three-fourths of the time. Lime and fertilizer are needed. Cover crops and crop residue left on the soil protect the soil from erosion. They can also be plowed under to improve soil fertility. This soil is too steep to be effectively irrigated.

This soil is moderately well suited to use as pasture. Coastal bermudagrass and bahiagrass are well adapted. This soil requires fertilizer and lime. For maximum yields and good ground cover, controlled grazing is needed to maintain vigorous plants.

The potential productivity of pine trees is high. Equipment use limitations and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has moderate limitations for use as building sites and local roads and streets and severe limitations for small commercial buildings because of the high water table during wet periods. Slope is also a limitation for commercial buildings. This soil has severe limitations for septic tank absorption fields because of the high water table and the poor filtering qualities. Alternative systems can reduce or overcome these limitations. This soil has severe limitations for sewage lagoons because of seepage, slope, and the high water table during wet periods. It has severe limitations for sanitary landfills because of seepage and the high water table.

Limitations are severe for recreational development because the soil is too sandy. Suitable topsoil or some form of surfacing can reduce or overcome this limitation. This soil is also too steep for playgrounds.

This Chipley soil is in capability subclass IVs and in woodland sutability group 11S.

6—Escambia sandy loam, 2 to 5 percent slopes. This soil is somewhat poorly drained and gently sloping. It is on seepage slopes on uplands. Individual areas of this soil range mostly from 5 to more than 100 acres; a few areas are as small as 2 acres. Slopes are concave.

Typically, the surface layer is sandy loam 9 inches thick. It is very dark gray to a depth of 6 inches and very dark grayish brown below that. The next layer is yellowish brown sandy loam to a depth of 12 inches. The subsoil is sandy loam. It extends to a depth of 67 inches. It is yellowish brown to a depth of 17 inches, brownish yellow to a depth of 23 inches, and brownish yellow with plinthite and gray mottles below that. The substratum is loam. It is mottled light gray, red, and pale yellow to a depth of 73 inches and gray with mottles in shades of red, yellow, pink, and brown to a depth of at least 80 inches.

Included in mapping are small areas of Bibb, Dothan, Florala, Fuquay, Kinston, Leefield, Malbis, and Stilson soils. Also included are a few areas of soils similar to Escambia soil except they have slope of 0 to 2 and 5 to 8 percent, are moderately well drained, do not have plinthite (mostly at drainage heads), have less than 18 percent clay in the upper part of the subsoil, have less than 20 percent silt in the upper part of the soil, or they are sandy within a depth of 60 inches. Included are areas of soils that are poorly drained at seepage spots. The included soils make up less than 25 percent of the map unit.

This Escambia soil has a high water table at a depth of 18 to 30 inches for 1 to 4 months annually. In about 20 to 30 percent of the soil, the high water table is at a depth of 10 to 18 inches for short periods. The available water capacity is moderate or high in the surface layer and low to high in the subsoil. Permeability is moderately rapid in the surface layer, moderate in the upper part of the subsoil, and moderately slow or slow in the lower part. The organic matter content is low or moderately low. The internal drainage rate under natural conditions is slow, and response to artificial drainage is moderate.

The natural vegetation is mostly longleaf, loblolly, and slash pine that has an understory of gallberry and waxmyrtle. Pitcherplants are in poorly drained areas. The most common native grass is pineland threeawn (wiregrass). Other grasses are bluestem, panicum, carpetgrass, and longleaf uniola.

This Escambia soil has moderate limitations for cultivated crops because of the hazard of erosion. The variety of adapted crops is somewhat limited by occasional wetness. Crops, such as corn and peanuts, adapt if they are properly managed. Erosion control measures, such as terraces that have stabilized outlets and contour cultivation of row crops in alternate strips with cover crops, are needed. Crop rotations need to include cover crops that remain on the land at least half the time. Crop residue and the soil-improving cover crops left on the soil protect the soil from erosion. Maximum yields require good seedbed preparation, fertilizer, and lime.

This soil is well suited to pasture and hay. Improved pasture plants, such as clovers, tall fescue, coastal bermudagrass, and improved bahiagrass, are well adapted and produce well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants and a good ground cover.

The potential productivity of pine trees is high. Equipment use limitations and windthrow hazard are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has moderate limitations for use as building sites and local roads and streets because of the high water table during wet periods. It has severe limitations for septic tank absorption fields because of the high water table and slow permeability in the subsoil. Alternative systems or suitable fill can reduce this limitation. This soil has severe limitations for sanitary landfills because of the seasonal high water table. Seepage is a moderate limitation for sewage lagoons.

This soil has moderate limitations for recreational development because of wetness and slow percolation. Slope is a severe limitation for playgrounds.

This Escambia soil is in capability subclass IIe and in woodland suitability group 11W.

8—Dorovan-Pamlico association, frequently flooded. This association consists of soils that are nearly level and very poorly drained. They are in a regular and repeating pattern. The landscape is mainly large, hardwood swamps and flood plains of major drainageways. The Dorovan soil is in the middle of the delineation, and Pamlico soil is on the outer part. Mapped areas range from 20 to more than 750 acres. Individual areas of each soil range from 10 to 200 acres.

Dorovan soil makes up 50 to 70 percent of the association. Typically, this soil is black muck to a depth of at least 60 inches.

This Dorovan soil has a high water table near or above the surface for most of the year. This soil floods more often than once every 2 years for periods of more than 1 month. Permeability is moderate, and the available water capacity is very high. The organic matter content is very high. The internal drainage rate is slow because of the high water table. Response to drainage is rapid.

Pamlico soil makes up 15 to 25 percent of the association. Typically, this soil is dark reddish brown muck 2 inches thick and black muck to a depth of 30 inches. It is underlain by very dark grayish brown sand to a depth of at least 80 inches.

This Pamlico soil has a high water table near or above the surface for most of the year. This soil floods more often than once every two years for periods of 7 days to 1 month. Permeability is moderate, and the available water capacity is very high. The organic matter content is very high. The internal drainage rate is slow because of the high water table. Response to drainage is rapid.

Included with this association in mapping are areas of Rutlege, Bibb, Kinston, and Leon soils. Rutlege soils are very poorly drained and are around the outer edge of delineations. Bibb, Kinston, and Leon soils are the most significant of the included soils. These soils are poorly drained. Also included are areas of soils similar to Pamlico soil but they have a loamy substratum and areas of similar soils that have less than 16 inches of organic material. The included soils make up 15 to 25 percent of the association.

The natural vegetation is mostly baldcypress, blackgum, sweetbay, sweetgum, titi, and scattered slash pine. The understory is brackenfern, greenbrier, muscadine vine, and waxmyrtle.

The Dorovan and Pamlico soils have very severe limitations for cultivated crops because of wetness. In their natural condition, they are not suitable for cultivation, but with adequate water control and protection from flooding, they are suited to most vegetable crops. A water control system to remove excess water during times when crops are on the land and to keep the soils saturated with water at all other times is needed. Fertilizers that contain phosphates, potash, and minor elements are needed, and these acid soils need heavy applications of lime. Crop rotation of water-tolerant cover crops and row crops is also needed. All crop residue and cover crops left on the soil can protect the soil from wind erosion.

Most improved grasses and clovers adapted to the area grow well on these soils if flooding is controlled. The water control system needs to maintain the water table near the surface to prevent excessive oxidation of the organic horizons.

These soils are normally not planted to pine trees because of flooding. Equipment use limitations, seedling mortality, and plant competition are severe.

These soils are not suited to urban or recreational development. Flooding is a hazard, and wetness and poor soil quality are severe limitations that are not practical to overcome.

These Dorovan and Pamlico soils are in capability subclass VIIw and in woodland suitability group 7W.

9—Dothan loamy sand, 0 to 2 percent slopes. This soil is well drained and nearly level. It is on uplands. Individual areas of this soil range mostly from 10 to more than 50 acres; some areas are as small as 5 acres. Slopes are smooth to convex.

Typically, the surface layer is light olive brown loamy sand 9 inches thick. The subsoil is sandy clay loam. It is yellowish brown to a depth of 14 inches, brownish yellow to a depth of 26 inches, yellowish brown to a depth of 57 inches, and yellowish red to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Bibb, Florala, Fuquay, Malbis, Orangeburg, and Tifton soils and a few areas of Dothan soil that has slope of 2 to 5 percent or where the lower part of the subsoil is redder than typical. Also included are areas of soils similar to Dothan soil but they have a loamy sand or loamy fine sand surface layer. A few small wet areas are shown by a wet spot symbol. The included soils make up less than 25 percent of the map unit.

This Dothan soil has a high water table at a depth of more than 60 inches for most of the year. After periods of heavy rainfall, a perched water table is at a depth of 30 to 50 inches. The available water capacity is low or moderate in the surface layer and very low to moderate in the subsoil. Permeability is moderately rapid in the surface layer and moderate to slow in the subsoil. The organic matter content is very low throughout. Runoff during rain is slow in unprotected areas. Internal drainage is moderately slow under natural conditions, and response to artificial drainage is moderate.

The natural vegetation is mostly longleaf pine, slash pine, loblolly pine, gallberry, turkey oak, laurel oak, dogwood, and hickory. Pineland threeawn (wiregrass) is the most common native grass.

This Dothan soil has slight limitations for cultivated crops. The variety of well adapted crops is slightly limited by a restricted root zone and wetness. Corn, peanuts, and soybeans (fig. 7) are well adapted. Crop rotations that provide cover crops on the land at least half the time are needed. Good seedbed preparation, fertilizer, and lime are needed for best yields.

This soil is well suited to use as pasture. Tall fescue, clovers, and coastal bermudagrass are well adapted and grow well if properly managed. This soil responds well to fertilizers and lime. Controlled grazing can help maintain plant vigor.

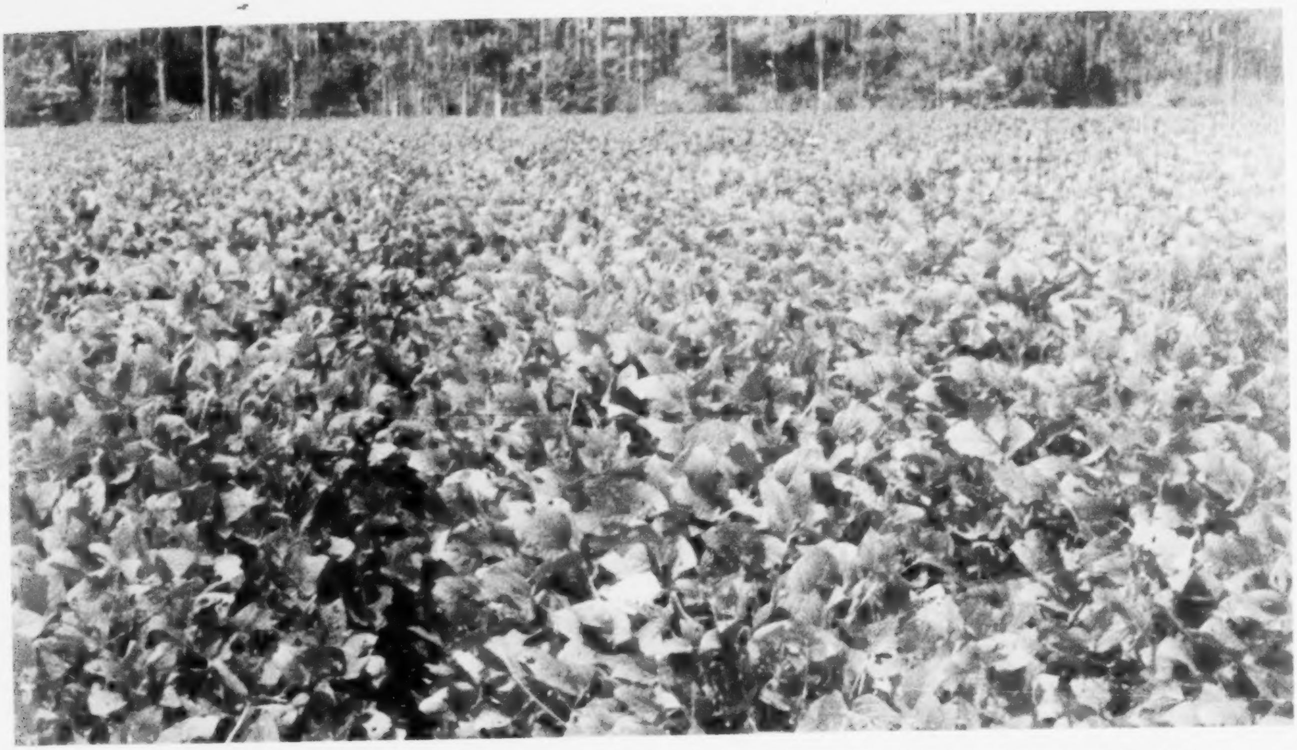

Figure 7.—Soybeans is one of the principal crops in Walton County. The soil is Dothan loamy sand, 0 to 2 percent slopes.

The potential productivity of pine trees is high. Plant competition is moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for area sanitary landfills, building sites, local roads and streets, and recreational development. It has severe limitations for septic tank absorption fields because of the high water table in wet periods and moderately slow or slow permeability in the subsoil. Alternative systems or fill can reduce these limitations. This soil has moderate limitations for trench sanitary landfills because of wetness.

This Dothan soil is in capability class I and in woodland suitability group 11A.

10—Dothan loamy sand, 2 to 5 percent slopes. This soil is well drained and gently sloping. It is on broad and narrow ridgetops on uplands. Individual areas of this soil range mostly from 20 to 100 acres; some areas are as small as 3 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is very dark grayish brown loamy sand 8 inches thick. The subsoil extends to a depth of at least 80 inches. It is yellowish brown sandy loam to a depth of 11 inches, and to a depth of 60 inches, it is yellowish brown and brownish yellow sandy clay loam that has plinthite in the lower part. The lower part of the subsoil is reticulately mottled sandy loam in shades of red, brown, yellow, and gray.

Included with this soil in mapping are small areas of Angie, Bibb, Florala, Fuquay, Johnston, Kinston, Malbis, Norfolk, Orangeburg, and Tifton soils and small areas of Dothan soil that has slopes of 0 to 2 and 5 to 8 percent or where the lower part of the subsoil is redder than is typical. A few wet areas are shown by a wet spot symbol. Included are areas of soils that are sandy within a depth of 60 inches. Also included are soils similar to the Dothan soil except they have less than 18 percent clay in the upper 20 inches of the subsoil or have a sandy loam surface layer. A few small areas where the surface is eroded are included. The included soils make up less than 25 percent of the map unit.

This Dothan soil has a perched water table at a depth of 30 to 50 inches after periods of heavy rainfall. The water table is at a depth of more than 60 inches for most of the year. The available water capacity is low or moderate. Permeability is moderately rapid in the surface layer and moderately slow or slow in the subsoil. The organic matter content is very low. The internal drainage rate is moderately slow, and runoff is moderate.

The natural vegetation is mostly longleaf pine, slash pine, loblolly pine, gallberry, turkey oak, laurel oak, dogwood, and hickory. Pineland threeawn (wiregrass) is the most common native grass.

This Dothan soil has moderate limitations for cultivated crops because of the hazard of erosion. The variety of adapted crops is somewhat limited by occasional wetness. Corn and peanuts adapt well if properly managed. Good management practices include terraces that have stabilized outlets, contour cultivation of row crops in alternate strips with cover crops, crop rotations that include cover crops on the land at least half the time, and crop residue and soil-improving cover crops left on the soil to protect the soil from erosion. Maximum yields require good seedbed preparation, fertilizer, and lime.

This soil is well suited to pasture and hay. Improved pasture plants, such as clovers, tall fescue, coastal bermudagrass, and bahiagrass, are well adapted and produce well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants and a good ground cover.

The potential productivity of pine trees is high. Plant competition is moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for sanitary landfills, building sites, and local roads and streets. It has moderate limitations for sewage lagoons because of slope and moderate limitation for trench sanitary landfills because of the high water table in wet periods. This soil has severe limitations for septic tank absorption fields because of the seasonal high water table and moderate slow or slow permeability in the subsoil. Alternative systems or fill can reduce these limitations.

This soil has slight limitations for most recreational development. Slope is a moderate limitation for playgrounds.

This Dothan soil is in capability subclass IIe and in woodland suitability group 11A.

11—Dothan loamy sand, 5 to 8 percent slopes. This soil is well drained and sloping. It is on side slopes on uplands. Individual areas of this soil range mostly from 5 to 25 acres; some areas are as small as 3 acres. Slopes are mostly concave but are convex in places.

Typically, the surface layer is very dark grayish brown loamy sand 7 inches thick. The subsoil is yellowish brown sandy clay loam to a depth of at least 80 inches. Plinthite is between a depth of 40 and 55 inches.

Included with this soil in mapping are small areas of Angie, Bibb, Cowarts, Florala, Fuquay, Johnston, Kinston, Malbis, Norfolk, Orangeburg, and Tifton soils and a few areas of Dothan soil that has slopes of 2 to 5 and 8 to 12 percent. Also included are areas of soils that are similar to Dothan soil except they have a sandy loam surface layer. Moderately eroded spots are common in cultivated areas. The included soils make up less than 25 percent of the map unit.

This Dothan soil does not have a water table within a depth of 60 inches for most of the year, but a perched high water table is at a depth of 30 to 50 inches after heavy rainfall. The available water capacity is low or moderate. Permeability is moderately rapid in the surface layer and moderately slow or slow in the subsoil. The organic matter content is very low throughout. Runoff is rapid.

The natural vegetation is mostly longleaf pine, slash pine, loblolly pine, turkey oak, laurel oak, flowering dogwood, gallberry, and hickory. Pineland threeawn (wiregrass) is the most common native grass (fig 8).

This Dothan soil has severe limitations for cultivated crops because of the hazard of erosion, but it is fairly suited to most cultivated crops, such as corn, soybeans, and peanuts. Intensive erosion control measures are needed. Contour cultivation of row crops in alternate strips with close-growing crops, crop rotations that include close-growing crops on the land at least two-thirds of the time, crop residue left on the soil help protect the soil from erosion. Maximum yields require good seedbed preparation, fertilizer, and lime.

This soil is moderately well suited to pasture and hay. Cool-season plants, such as tall fescue and clovers, are poorly adapted. Coastal bermudagrass and improved bahiagrass grow moderately well if fertilizer and lime are applied to the soil. For maximum yields and good ground cover, controlled grazing is needed to maintain plant vigor.

The potential productivity of pine trees is high. Plant competition is moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for area sanitary landfills, building sites and local roads and streets. Slope is a moderate limitation for small commercial buildings. It has severe limitations for septic tank absorption fields because of the high water table in wet periods and the moderately slow or slow permeability in the subsoil. Alternative systems or fill can reduce these limitations. Slope is a moderate limitation for sewage lagoons, and the seasonal water table is a moderate limitation for trench sanitary landfills.

This soil has slight limitations for most recreational development. Slope is a moderate limitation for playgrounds.

This Dothan soil is in capability subclass IIIe and in woodland suitability group 11A.

12—Foxworth sand, 0 to 5 percent slopes. This soil is moderately well drained and nearly level to gently sloping. It is on uplands and in elevated areas on flatwoods. Individual areas of this soil range mostly from 10 to more than 200 acres; some areas are as small as 5 acres. Slopes are mostly smooth to convex but are concave in places.

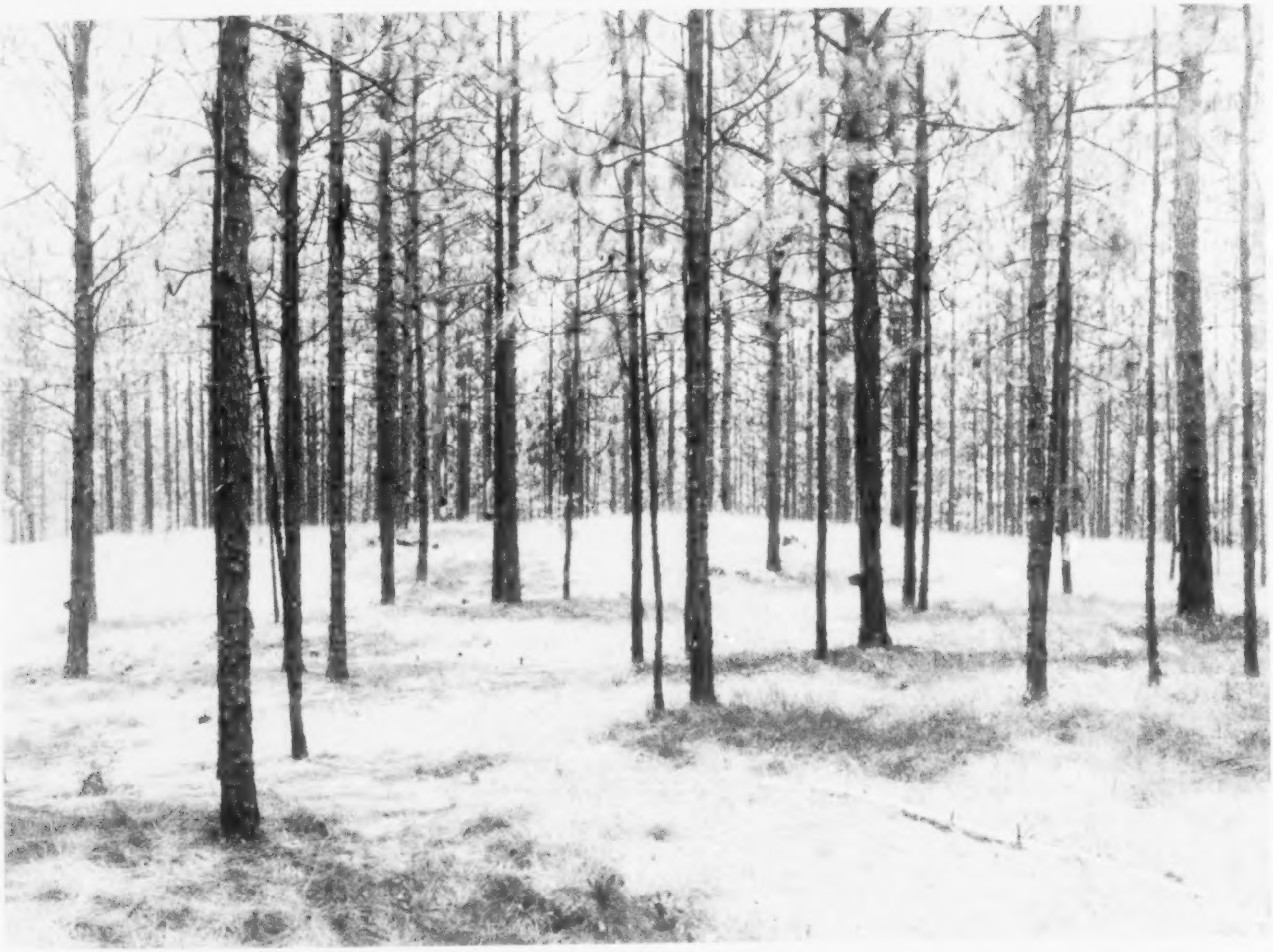

Figure 8.—Pine trees and pineland threeawn (wiregrass) are natural vegetation on Dothan loamy sand, 5 to 8 percent slopes. Cover plants are needed on this soil to control erosion.

Typically, this soil is sand throughout. The surface layer is about 7 inches thick. It is grayish brown to a depth of 3 inches and brown below that. The underlying material is yellowish brown to a depth of 18 inches, brownish yellow to a depth of 44 inches, yellow to a depth of 54 inches, very pale brown to a depth of 69 inches, and light gray to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Albany, Blanton, Chipley, Lakeland, and Troup soils. Also included are soils similar to Foxworth soil except they have slopes of 5 to 8 percent. Included are areas of soils that have a slight increase in clay content just above a dark color subsoil. The included soils make up less than 15 percent of the map unit.

This Foxworth soil has a high water table that fluctuates between depths of 40 and 72 inches for 1 to 3 months during most years and between 30 and 40 inches for less than 1 month in some years. The available water capacity is low, and permeability is very rapid throughout. The organic matter content is low. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation is mostly slash pine, loblolly pine, longleaf pine, live oak, post oak, bluejack oak, turkey oak, laurel oak, red oak, water oak, huckleberry, gallberry, and dogwood. Pineland threeawn (wiregrass) is the most common native grass.

This Foxworth soil has severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. In wet seasons, the high water table affects the availability of water in the root zone by providing water through capillary rise. In very dry seasons, the water table drops well below the root zone and little capillary water is available to plants. Row crops need to be planted on the contour in alternate strips with close-growing crops that remain on the land at least two-thirds of the time. Lime and fertilizer are needed. Soil-improving cover crops and crop residue left on the soil protect the soil from erosion. Irrigation on high value crops is usually feasible where irrigation water is readily available.

This soil is moderately well suited to pasture and hay. Coastal bermudagrass and bahiagrass are well adapted. This soil requires fertilizer and lime. For maximum yields, controlled grazing is needed to maintain vigorous plants.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for building sites, and local roads and streets. It has moderate limitations for septic tank absorption fields because of wetness. The excessive permeability can cause pollution of ground water in areas of high density. Alternative systems can reduce this hazard. This soil has severe limitations for sewage lagoons and area sanitary landfills because of seepage. If used for a sewage lagoon, the sidewalls need to be shored, lined, and sealed. This soil has severe limitations for trench sanitary landfills because of seepage and the high water table during wet periods.

Limitations for recreational development are severe because the sandy surface causes poor trafficability. Suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Foxworth soil is in capability subclass IIIs and in woodland suitability group 10S.

13—Fuquay loamy sand, 0 to 5 percent slopes. This soil is well drained and nearly level to gently sloping. It is on uplands. Individual areas of this soil range mostly from 15 to more than 100 acres; some are as small as 5 acres. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown loamy sand 5 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 26 inches. The subsoil is sandy loam. To a depth of 61 inches, it is yellowish brown with plinthite in the lower part, and to a depth of 74 inches, it is brownish yellow. The substratum is red coarse sandy loam that has mottles in shades of red, brown, yellow, and gray to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Albany, Bonifay, Bonneau, Dothan, Escambia, Florala, Lucy, Malbis, Stilson, and Troup soils. Also included are soils similar to Fuquay soil except they have a thinner E horizon and sandy loam subsoil, have more than 5 percent ironstone pebbles in the surface and subsurface layers, or have a sand and loamy fine sand surface layer. Also included are small areas of Fuquay soil that has slopes of 5 to 8 percent. The included soils make up less than 20 percent of the map unit.

This Fuquay soil has a perched high water table at a depth of 50 to 70 inches after heavy rainfall. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. The organic matter content is low. Rainfall is rapidly absorbed with little runoff.

Natural vegetation is mostly longleaf pine, slash pine, loblolly pine, turkey oak, laurel oak, and an understory of gallberry and smaller oaks. Pineland threeawn (wiregrass) is the most common native grass.

This Fuquay soil has moderate limitations for cultivated crops. It has a well aerated root zone that is limited by a slowly permeable subsoil at a depth of 30 to 50 inches. This soil can be cultivated safely with ordinary good farming methods, but droughtiness and rapid leaching of plant nutrients limit the choice of crops and the potential yields of adapted crops. With good management, such crops as corn, soybeans, and peanuts can be grown. Proper management includes row crops planted on the contour in alternate strips with cover crops, crop rotations with cover crops that remain on the ground at least half the time, and crop residue left on the soil to protect the soil from erosion. Best yields require good seedbed preparation, fertilizer, and lime.

This soil is well suited to use as pasture. Coastal bermudagrass and bahiagrass are well adapted. This soil responds well to fertilizer and lime. For maximum yields and good cover, controlled grazing is needed to maintain vigorous plants.

The potential productivity of pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. It has moderate limitations for septic tank absorption fields because of moderate to slow permeability in the subsoil. Alternative systems or fill can reduce this limitation. This soil has moderate limitations for sewage lagoons because of slope. This soil has slight limitation for sanitary landfills.

This soil has moderate limitations for recreational development because it is too sandy; however, the addition of suitable topsoil or some form of surfacing can reduce or overcome this limitation. Slope is a limitation for playgrounds.

This Fuquay soil is in capability subclass IIs and in woodland suitability group 11S.

14—Fuquay loamy sand, 5 to 8 percent slopes. This soil is well drained and sloping. It is on side slopes on uplands. Individual areas of this soil range from 5 to 80 acres. Slopes are mostly concave, but some are convex.

Typically, the surface layer is dark grayish brown loamy sand 5 inches thick. The subsurface layer is loamy sand to a depth of 34 inches. It is yellowish brown to a depth of 30 inches and brownish yellow below that. The subsoil extends to a depth of at least 80 inches. To a depth of 45 inches, it is brownish yellow sandy loam that has plinthite. It is brownish yellow sandy clay loam to a depth of 63 inches and yellow sandy clay loam below that.

Included with this soil in mapping are small areas of Bonifay, Bonneau, Dothan, Escambia, Florala, Lakeland, Lucy, Malbis, Stilson, and Troup soils. Also included are soils that are similar to Fuquay soil except they have a sand and loamy fine sand surface layer. Small areas of Fuquay soil that has slopes of 0 to 5 and 8 to 12 percent are included. The included soils make up less than 25 percent of the map unit.

This Fuquay soil has a perched high water table at a depth of 50 to 70 inches during wet periods. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. The organic matter content is low. Rainfall is rapidly absorbed in protected areas, and runoff is slight.

Natural vegetation is mostly longleaf pine, slash pine, loblolly pine, turkey oak, and laurel oak. The understory is gallberry and small oaks. Pineland threeawn (wiregrass) is the most common native grass.

This Fuquay soil has severe limitations for cultivated crops because of droughtiness and rapid leaching of plant nutrients. The root zone is limited by a slowly permeable subsoil at a depth of 30 to 50 inches. The steepness of slopes makes cultivation more difficult and increases the hazard of erosion. Cultivated row crops need to be planted on the contour with alternating wider strips of close-growing, soil-improving crops that remain on the land at least two-thirds of the time. Fertilizer and lime are needed. Cover crops and crop residue left on the soil protect the soil from erosion.

This soil is moderately well suited to use as pasture. Deep-rooting plants, such as coastal bermudagrass and bahiagrass are well adapted. Steepness of slope increases the hazard of erosion and reduces the potential yields. Fertilizer and lime are needed to produce good stands of grass. Controlled grazing helps maintain plant vigor tc complete vegetative cover.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. Steepness of slope is a moderate limitation for small commercial buildings. This soil has moderate limitations for septic tank absorption fields because of moderate to slow permeability in the subsoil. Alternative systems or fill can reduce this limitation. This soil has slight limitations for sanitary landfills and moderate limitations for sewage lagoons because of slope.

This soil has moderate limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or overcome this limitation. Slope is a severe limitation for playgrounds.

This Fuquay soil is in capability subclass IIIs and in woodland suitability group 11S.

15—Kinston-Johnston-Bibb complex, frequently flooded. This map unit consists of nearly level Kinston, Bibb, and Johnston soils on flood plains in narrow creek and stream bottoms. Kinston and Bibb soils are poorly drained, and Johnston soil is very poorly drained. The landscape is dissected with many small, 6 inches to 3 feet deep and 1 foot to 4 feet wide, meandering channels. Slope is smooth and ranges from 0 to 2 percent. Areas of these soils are too intricately mixed or too small to be mapped separately at the selected scale. Areas of this map unit range from 50 to more than 500 acres. Individual areas of soils within the map unit range from less than 1 acre to 5 acres.

Kinston soil makes up about 20 to 40 percent of the map unit. Typically, the surface layer is very dark gray loam 6 inches thick. The underlying material extends to a depth of at least 80 inches. It is very dark grayish brown sandy clay loam to a depth of 35 inches, light brownish gray sandy clay loam to a depth of 42 inches, light gray sand to a depth of 48 inches, and light gray clay loam below that.

This Kinston soil has a high water table within 10 inches of the surface for more than 6 months in most years. There is more than a 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The root zone is limited by the high water table. The available water capacity is moderate or high throughout. Permeability is moderately rapid in the surface layer and moderate in the underlying material. The organic matter content is moderate. Runoff accumulates in some areas during heavy rains. Internal drainage is slow, but response to artificial drainage is moderate.

Johnston soil makes up about 10 to 35 percent of the map unit. Typically, the surface layer is very dark gray mucky loam 37 inches thick. The underlying material is light brownish gray sand to a depth of at least 65 inches.

This Johnston soil has a high water table at or above the surface for more than 6 months in most years. It has more than a 50 percent chance of flooding in any one year for periods ranging from 7 to more than 30 days. The root zone is limited by the high water table. The available water capacity is moderate or high throughout. Permeability is moderately rapid in the surface layer and rapid in the underlying material. The organic matter content is very high. Runoff accumulates in many areas during heavy rains. The internal drainage is moderate, and response to artificial drainage is rapid.

Bibb soil makes up 10 to 25 percent of the map unit. Typically, the surface layer is dark gray to dark grayish brown loam 12 inches thick. The underlying material is grayish brown sandy loam to a depth of 37 inches and light brownish gray stratified sand and loamy sand to a depth of at least 65 inches.

This Bibb soil has a high water table within 18 inches of the surface for 1 to 4 months in most years. It has more than a 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The root zone is limited by the high water table. The available water capacity is moderate or high throughout. Permeability is moderate. The organic matter content is low or moderately low. The internal drainage is slow, but response to artificial drainage is rapid.

Included with this complex in mapping are the Albany, Chipley, Dorovan, Escambia, Florala, Leefield, Pamlico, Pantego, Stilson, and Rutlege soils. Also included are a few small areas of soils that are moderately well drained to poorly drained. These soils are loamy to a depth of less than 40 inches and are underlain by sandy material. Small, narrow areas of soils that are moderately well drained to poorly drained and sandy are adjacent to streams. The included soils make up about 35 percent of the complex.

The natural vegetation is mostly scattered pine, gum, cypress, juniper (white-cedar), oaks, and titi. The understory is greenbrier, waxmyrtle, and ferns.

The soils of this complex are not suited to cultivated crops or pasture because of wetness and flooding.

These soils have high potential productivity for pine trees. Equipment use limitations, seedling mortality, windthrow hazard, and plant competition are severe. Surface drainage and bedding are needed before planting. Loblolly pine are the best trees to plant if these soils are adequately drained.

These soils are not suited to urban or recreational development. Wetness and the hazard of flooding are severe limitations that are not practical to overcome.

This complex is in capability subclass VIIw. Kinston and Bibb soils are in woodland suitability group 9W, and Johnston soil is in 7W.

16—Kureb sand, 0 to 8 percent slopes. This soil is excessively drained and nearly level to sloping. It is on broad, undulating ridges and short side slopes on upland sand hills and dune-like ridges. Individual areas of this soil range from 50 to 800 acres. Slopes are smooth to convex and concave.

Typically, the surface layer is gray sand 4 inches thick. The subsurface layer is white sand to a depth of 17 inches. The subsoil is sand to a depth of 68 inches. To a depth of 28 inches, it is brownish yellow with white tongues. It is yellowish brown to a depth of 37 inches, brownish yellow to a depth of 47 inches, and yellow below that. The substratum is very pale brown sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Corolla, Mandarin, Newhan, and Resota soils. Also included are some areas of Kureb soil mainly along bays and beaches that have abrupt drop off. This soil is designated by the short, steep slope symbol. The included soils make up less than 20 percent of the map unit.

This Kureb soil has a loose, well aerated root zone to a depth of more than 72 inches. The available water capacity is very low, and permeability is very rapid throughout. The organic matter content is low, and fertilizers are rapidly leached from the soil. Rainfall is rapidly absorbed in protected areas, and there is little runoff. This soil does not have a high water table within a depth of 6 feet.

Natural vegetation is mostly turkey oak, bluejack oak, a few live oak, scattered sand pine, and in places longleaf pine. The understory is huckleberry. In some areas, sand pine is the dominant tree. The most common native grass is pineland threeawn (wiregrass). Because of the salt spray, the vegetation nearest the Gulf of Mexico is stunted.

This Kureb soil is not suited to cultivated crops, and it is poorly suited to use as pasture. Coastal bermudagrass and bahiagrass make only fair growth even if the soil is fertilized. Clovers are not adapted.

The potential productivity for pine trees is low. Equipment use limitations and seedling mortality are severe. Plant competition is slight. Sand pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. It has slight limitations for septic tank absorption fields. However because of poor filtration, ground water contamination is a hazard where there are many septic tanks. Alternative systems can reduce this hazard. This soil has severe limitations for sewage lagoons and sanitary landfills because of of the sandy texture and seepage. If used for these purposes, the sandy sidewalls and bottom should be sealed.

This soil has severe limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Kureb soil is in capability subclass VIIs and in woodland suitability group 3S.

17—Lakeland sand, 0 to 5 percent slopes. This soil is excessively drained and nearly level to gently sloping. It is on broad ridgetops on uplands. Individual areas of this soil range mostly from 40 to more than 300 acres; some areas are as large as 1,000 acres and others are as small as 5 acres. Slopes are mostly smooth to concave but are convex in places.

Typically, the surface layer is dark grayish brown sand 4 inches thick. The underlying material is sand. It is yellowish brown to a depth of 7 inches, brownish yellow to a depth of 60 inches, and light yellowish brown to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Bonifay, Chipley, Dorovan, Eglin, Foxworth, Kenansville, Pamlico, and Troup soils. Also included are areas of soils that have slopes of more than 5 percent but are otherwise similar to Lakeland soil and soils that are similar but have a few thin lamellae below a depth of 65 inches. The lamellae has cumulative thickness of less than 1 centimeter. The soils containing lamellae generally are along areas near the Choctawhatchee River and are near delineations of Troup soils. A few small wet areas are shown by wet spot symbols. The included soils make up less than 15 percent of the map unit.

This Lakeland soil has low available water capacity. Permeability is rapid. The organic matter content is very low or low. Rainfall is rapidly absorbed in protected areas, and there is little runoff. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly slash pine, loblolly pine, longleaf pine, turkey oak, post oak, and blackjack oak. In the southern part of the county, the vegetation is sand pine, live oak, sawpalmetto, and reindeer moss. Pineland threeawn (wiregrass) is the most common native grass. Other grasses include creeping bluestem, lopsided indiangrass, hairy panicum, splitbeard bluestem, purple lovegrass, and broomsedge bluestem.

This Lakeland soil has very severe limitations for cultivated crops because of poor soil quality. Intensive soil management practices are required if this soil is cultivated. Droughtiness and rapid leaching of plant nutrients limit the choice of crops and reduce yields of adapted crops. Irrigation is usually feasible where irrigation water is readily available.

This soil is moderately suited to pasture and hay. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed because of rapid leaching. Controlled grazing permits plants to maintain vigor for best yields.

The potential productivity for pine trees is moderately high. Equipment use limitations and seedling mortality are moderate. Sand, slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for use as building sites, local roads and streets, and septic tank absorption fields. However, because of poor filtration, ground water contamination is a hazard where there are many septic tanks. Alternative systems can reduce this hazard. Because of seepage, this soil has severe limitations for sewage lagoons and area sanitary landfills. Seepage and the sandy texture are severe limitations for trench sanitary landfills. If this soil is used for sewage lagoons and landfills, the sides and bottom of the excavation need to be sealed.

This soil has severe limitations for recreational development because the sandy texture causes poor trafficability. A suitable topsoil or some form of surfacing can reduce or overcome these limitations.

This Lakeland soil is in capability subclass IVs and in woodland suitability group 9S.

18—Lakeland sand, 5 to 12 percent slopes. This soil is excessively drained and sloping to strongly sloping. It is mainly on upland side slopes leading to drainageways and around depressions. Individual areas of this soil range mostly from 30 to more than 100 acres some areas are as small as 5 acres. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown sand 3 inches thick. The underlying material is sand. It is yellowish brown to a depth of 37 inches and yellowish brown over brownish yellow to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Bonifay, Chipley, Foxworth, and Troup soils. Also included are some areas of Lakeland soil that have abrupt drop off. This soil is designated by the short, steep slope symbol. Areas of soils that have slopes of less than 5 percent and soils that have slopes of more than 12 percent are also included. Small areas of poorly drained soils are at seepage spots in and along stream bottoms and drainageways. The included soils make up less than 20 percent of the map unit.

This Lakeland soil has low available water capacity. Permeability is rapid. The organic matter content is very low or low. Rainfall is absorbed in protected areas, and there is little runoff. This soil does not have a seasonal high water table within a depth of 6 feet.

Natural vegetation is mostly slash pine, loblolly pine, longleaf pine, turkey oak, and blackjack oak. In the southern part of the county, sand pine, scrub oak, live oak, and sawpalmetto are included. Pineland threeawn (wiregrass) is the most common native grass. Other grasses include creeping bluestem, lopsided indiangrass, hairy panicum, splitbeard bluestem, purple lovegrass, and broomsedge bluestem.

This Lakeland soil is not suited to cultivated crops because of poor soil quality, steepness of slope, and susceptibility to erosion.

This soil is moderately suited to use as pasture. Deep rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed because of rapid leaching. Controlled grazing permits plants to maintain vigor for highest yields.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Sand, slash, loblolly, and longleaf pines are the best trees to plant.

This soil has moderate limitations for building sites and local roads and streets because of slope. This soil has moderate limitations for septic tank absorption fields. However, because of poor filtration, ground water contamination is a hazard where there are many septic tanks. Alternative systems can reduce this hazard. This soil has severe limitations for sewage lagoons because of seepage and slope. It has severe limitations for sanitary landfills because of seepage and the sandy texture. When used for sewage lagoons and landfills, the sandy sidewalls and bottoms should be sealed.

This soil has severe limitations for most recreational development because it is too sandy. Suitable topsoil, or some form of surfacing can reduce or overcome this limitation. Slope is a limitation for playgrounds.

This Lakeland soil is in capability subclass VIs and in woodland suitability group 9S.

19—Lakeland sand, 12 to 30 percent slopes. This soil is excessively drained and moderately steep and steep. It is on upland side slopes leading to drainageways and depressions. Individual areas of this soil range from 20 to 80 acres. Slopes are mostly concave but are convex in places.

Typically, the surface layer is dark grayish brown and grayish brown sand 5 inches thick. The underlying material is sand to a depth of at least 80 inches. It is brownish yellow to a depth of 40 inches, pale brown to a depth of 60 inches, and very pale brown below that.

Included with this soil in mapping are small areas of Bonifay, Chipley, Dorovan, Foxworth, Pamlico, and Troup soils along slope breaks and streams and around stream heads. Also included in and along narrow stream bottoms and drainageways are small areas of soils that are poorly drained. Areas of soils that are similar to Lakeland soil are included. Some of these soils have slope of 5 to 12 percent, and others have slope of more than 30 percent. A few areas of soils in the southern part of Eglin Air Force Base have slopes as steep as 70 percent. These areas are shown with a short, steep slope symbol. The included soils make up less than 25 percent of the map unit.

This Lakeland soil has low available water capacity. Permeability is rapid. The organic matter content is very low or low. Rainfall is rapidly absorbed into the soil, but runoff in unprotected areas during heavy rainfall is rapid. This soil does not have a high water table within a depth of 6 feet.

Natural vegetation is mostly slash pine, loblolly pine, longleaf pine, turkey oak, post oak, live oak, and blackjack oak. In the southern part of the county, sand pines are dominant but live oak and sawpalmetto also grow. Pineland threeawn (wiregrass) is the most common native grass.

This Lakeland soil is not suited to cultivated crops or pasture because of poor soil quality, steepness of slope, and susceptibility to erosion.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Sand, slash, loblolly, and longleaf pines are the best trees to plant.

This soil has severe limitations for sanitary facilities, building sites, and recreational development because of slope and poor soil qualities.

This Lakeland soil is in capability subclass VIIs and in woodland suitability group 9S.

20—Leefield-Stilson loamy sands, 0 to 5 percent slopes. This map unit consists of soils that are on nearly level to gently sloping seepage slopes and low flats. Areas of the somewhat poorly drained Leefield soil and moderately well drained Stilson soil are too intricately mixed and too small to be mapped separately at the selected scale. Areas of this map unit range from 5 to 50 acres. Individual areas of soils within the map unit range from 1 acre to 3 acres.

Leefield soil makes up about 60 to 80 percent of the map unit. Typically, the surface layer is very dark gray loamy sand to a depth of 7 inches. The subsurface layer is loamy sand to a depth of 26 inches. It is yellowish brown to a depth of 15 inches and brownish yellow below that. The subsoil extends to a depth of at least 80 inches. It is light yellowish brown fine sandy loam to a depth of 34 inches and yellowish brown sandy clay loam to a depth of 40 inches. Below that, it is sandy clay loam that has plinthite and is reticulately mottled in shades of red, gray, brown, and yellow.

This Leefield soil has a perched water table at a depth of 18 to 30 inches for about 4 months during most years. In some areas, the perched water table is within a depth of 10 inches during periods of heavy rainfall. The available water capacity is low in the surface and subsurface layers and moderate or low in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow to moderate in the subsoil. The organic matter content is low or moderately low. The internal drainage rate under natural conditions is slow, and response to artificial drainage is moderately slow.

Stilson soil makes up about 10 to 25 percent of the map unit. Typically, the surface layer is very dark grayish brown loamy sand 7 inches thick. The subsurface layer is loamy sand to a depth of 25 inches. It is brown to a depth of 11 inches, yellowish brown to a depth of 16 inches, and brownish yellow below that. The subsoil extends to a depth of at least 80 inches. It is brownish yellow fine sandy loam to a depth of 32 inches, and below that, it is sandy clay loam that has plinthite and is reticulately mottled in shades of red, brown, and gray.

This Stilson soil has a perched water table at a depth of 30 to 40 inches for 1 to 4 months annually. The available water capacity is low in the surface and subsurface layers and moderate or low in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low. The internal drainage rate is slow under natural conditions, and response to artificial drainage is moderately slow.

Included with these soils in mapping are Albany, Blanton, Dothan, Escambia, Florala, Fuquay, Malbis, Pactolus, and Pantego soils. Also included in some wetter areas are Leefield and Stilson soils that do not have 5 percent plinthite and some seepage spots that have slopes of more than 5 percent. Wet soils that have a dark surface layer are along drainageways. The included soils make up about 10 to 15 percent of the map unit.

The natural vegetation is mostly slash, loblolly, and longleaf pine. The dominant understory is gallberry and southern bayberry. Wetter areas of these soils do not have pine trees but have pitcherplants. The most common native grasses are pineland threeawn (wiregrass) and little and pinehill bluestem. Other grasses include panicum and toothachegrass.

These soils have moderate limitations for cultivated crops because of wetness. They are suited to some cultivated crops, but the variety is limited to water-tolerant plants. If the soils are properly drained, corn, peanuts, and soybeans are adapted. Tile drains or open ditches are needed to remove water from the wetter areas. Row crops need to be rotated with cover crops that remain on the land at least half the time. Soil-improving cover crops and crop residue left on the soil protect the soil from erosion. For the best yields, these soils require good seedbed preparation, fertilizer, and lime.

These soils are well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well with good management. White clover and other legumes are moderately adapted. For best yields, these soils require fertilizer and lime and grazing needs to be carefully controlled to maintain plant vigor.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

These soils have moderate limitations for building sites and local roads and streets because of the high water table during the wet periods. They have severe limitations for septic tank absorption fields because of the high water table and moderately slow to moderate permeability in the subsoil. Alternative systems or fill can reduce these limitations. These soils have severe limitations for sewage lagoons and area sanitary landfills because of seepage and the high water table, which also is a severe limitation for trench sanitary landfills.

These soils have moderate limitations for recreational development mainly because of the seasonal high water table.

These Leefield and Stilson soils are in capability subclass IIw and in woodland suitability group 11W.

21—Leon sand. This soil is poorly drained and nearly level. It is on flatwoods. Individual areas of this soil range from 5 to 90 acres. Slope is smooth to convex and ranges from 0 to 2 percent.

Typically, the surface layer is very dark gray sand 9 inches thick. The subsurface layer is gray sand to a depth of 18 inches. The subsoil is dark reddish brown sand to a depth of 22 inches, black loamy sand to a depth of 27 inches, and yellowish brown sand to a depth of 31 inches. Below that is white sand to a depth of 67 inches and very dark gray sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Chipley, Hurricane, Mandarin, and Rutlege soils. Rutlege soils are the most common inclusion. Also included are a few areas of soils similar to Leon soil except they have a surface layer that is thicker, have a Bh horizon that is more than 30 inches below the surface, or more than half of the dark color subsoil is weakly cemented. The included soils make up less than 15 percent of the map unit.

This Leon soil has a high water table at a depth of 10 to 40 inches for periods of more than 9 months during most years. The high water table is at a depth of less than 10 inches for 1 to 4 months during periods of high rainfall and recedes to a depth of more than 40 inches during very dry seasons. The available water capacity is very low in the surface and subsurface layers and low in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate to moderately rapid in the subsoil, and very rapid below that. The organic matter content is low to moderate.

The natural vegetation is mostly longleaf pine, loblolly pine, slash pine, water oaks, and myrtle. The understory is sawpalmetto, running oak, fetterbush, and gallberry. The most common native grass is pineland threeawn (wiregrass). Other grasses are creeping and chalky bluestem, hairy panicum, lopsided indiangrass, panicum, and smooth cordgrass.

This Leon soil has very severe limitations for cultivated crops because of wetness and poor soil quality. However, with good water control measures and soil-improving measures, this soil is suited to a limited number of crops. Vegetables crops are the most suitable. Good management practices include a complete water control system that removes excess water quickly after heavy rains and supplies subsurface irrigation in dry seasons; row crops in rotation with soil-improving crops that remain on the land at least three-fourths of the time; and crop residue and cover crops left on the soil to protect the soil from erosion. Seedbed preparation should include bedding of the rows. Fertilizer and lime should be added according to the needs of the crops.

This soil is well suited to use as pasture and hay. Coastal bermudagrass, improved bahiagrass, and several legumes are adapted. Water control measures are needed to remove excess water during heavy rains. Regular applications of fertilizer and lime are needed because of rapid leaching. For best yields, controlled grazing is needed to maintain vigorous plants.

The potential productivity for pine trees is moderately high. Equipment use limitations, plant competition, windthrow hazard, and seedling mortality are moderate. Slash and loblolly pines are the best trees to plant.

This soil has severe limitations for building sites and local roads and streets because of the high water table during wet periods. It has severe limitations for septic tank absorption filter fields because of wetness and poor filtering capacity. Alternative systems or fill can reduce this limitation. This soil has severe limitations for sewage lagoons and sanitary landfills because of seepage and the high water table.

Limitations for recreational development are severe because of the high water table and the sandy surface. A suitable topsoil or some form of surfacing can reduce or overcome the limitations caused by the sandy surface.

This Leon soil is in capability subclass IVw and in woodland suitability group 7W.

22—Lucy loamy sand, 0 to 5 percent slopes. This soil is well drained and nearly level to gently sloping. It is on broad ridgetops on uplands. Individual areas of this soil range from 15 to more than 100 acres; some areas are as small as 5 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is very dark grayish brown loamy sand 8 inches thick. The subsurface layer is loamy sand to a depth of 33 inches. It is dark yellowish brown to a depth of 13 inches, dark brown to a depth of 24 inches, and strong brown below that. The subsoil extends to a depth of at least 80 inches. It is red sandy loam to a depth of 39 inches, and yellowish red and red sandy clay loam below that.

Included with this soil in mapping are small areas of Bonifay, Dothan, Fuquay, Orangeburg, Stilson, and Troup soils. Larger areas of Orangeburg soils are at breaks in the landscape. Also included are a few areas of soils similar to Lucy soil except they have a sandy and loamy fine sand surface layer, have slope of more than 5 percent, or have a darker red Bt horizon than allowed for the series. The included soils make up less than 20 percent of the map unit.

In this Lucy soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers, moderately rapid in the upper part of the subsoil, and moderate in the lower part. The organic matter content is low. Rainfall is rapidly absorbed, and there is little runoff. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly loblolly pine, slash pine, and longleaf pine, white oak, red oak, turkey oak, post oak, hickory, holly, and dogwood. Pineland threeawn (wiregrass) is the most common native grass.

This Lucy soil has moderate limitations for cultivated crops because of poor soil qualities. It can be cultivated safely with ordinary good farming methods. Droughtiness and rapid leaching of plant nutrients limit the choice of crops and the potential yields of adapted crops. With good management, corn, soybeans, and peanuts can be grown. Management practices include row crops planted on the contour in alternate strips with cover crops that remain on the ground at least half the time, and cover crops and crop residue left on the soil to protect the soil from erosion. For best yields, this soil requires good seedbed preparation, fertilizer, and lime. Irrigation is usually feasible where irrigation water is readily available.

This soil is well suited to use as pasture. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted. This soil responds well to fertilizer and lime. For maximum yields and good cover, controlled grazing is needed to maintain vigorous plants.

The potential productivity for pine trees is moderately high. Equipment use limitations and seedling mortality are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for most urban and recreational uses. Seepage is a severe limitation for sewage lagoons. If used for this purpose, the sidewalls should be sealed.

This Lucy soil is in capability subclass IIs and in woodland suitability group 11S.

23—Lucy loamy sand, 5 to 8 percent slopes. This soil is well drained and sloping. It is on side slopes on uplands. Individual areas of this soil range from 5 to 80 acres. Slopes are mostly convex but are concave in places.

Typically, the surface layer is dark brown loamy sand 9 inches thick. The subsurface layer is loamy sand to a depth of 28 inches. It is dark brown to a depth of 15 inches, strong brown to a depth of 20 inches, and yellowish red below that. The subsoil is red to a depth of at least 80 inches. It is sandy loam to a depth of 33 inches, sandy clay loam to a depth of 60 inches, and sandy loam below that.

Included with this soil in mapping are small areas of Dothan, Fuquay, Norfolk, Orangeburg, and Troup soils. Larger areas of Orangeburg soils are at breaks in the landscape. Also included are a few areas of soils similar to Lucy soil except they have a sand and loamy fine sand surface layer or have slopes more than or less than 5 to 8 percent. Also included are small areas of poorly drained soils in and along narrow stream bottoms and drainageways. A few areas include small gullies. The included soils make up less than 25 percent of the map unit.

In this Lucy soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the upper part of the subsoil and moderate in the lower part. The organic matter content is low. Runoff from unprotected areas is moderate. This soil does not have a seasonal high water table within a depth of 6 feet.

The natural vegetation is mostly loblolly pine, slash pine, longleaf pine, white oak, red oak, turkey oak, post oak, hickory, holly, and dogwood. Pineland threeawn (wiregrass) is the most common native grass.

This Lucy soil has severe limitations for cultivated crops because of poor soil qualities. Special soil-improving measures are required. Droughtiness and rapid leaching of plant nutrients severely limit the suitability for most row crops. The steepness of slopes further limits the suitability by making cultivation more difficult and by increasing the hazard of erosion. Cultivated row crops need to be planted on the contour in alternating wider strips of close-growing, soil-improving crops. The close-growing crops need to remain on the land at least two-thirds of the time. Fertilizer and lime are needed for best yields. Cover crops and crop residue left on the soil protect it from erosion.

This soil is moderately well suited to use as pasture. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted. Steepness of slope increases the hazard of erosion and reduces potential yields. Good stands of grass can be produced by adding fertilizer and lime to the soil. Controlled grazing is needed to maintain plant vigor to provide good protective cover.

The potential productivity for pine trees is moderately high. Equipment use limitations and seedling mortality are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for most urban and recreational uses. Slope is a moderate limitation for commercial building sites and a severe limitation for playgrounds. Seepage is a severe limitation for sewage lagoons. If this soil is used for this purpose, the sidewalls should be sealed.

This Lucy soil is in capability subclass IIIs and in woodland suitability group 11S.

25—Orangeburg sandy loam, 1 to 5 percent slopes. This soil is well drained and gently sloping. It is on broad, narrow ridgetops on uplands. Individual areas of this soil range from 15 to 80 acres. Slopes are smooth to concave and convex.

Typically, the surface layer is very dark grayish brown sandy loam 10 inches thick. The subsoil extends to a depth of at least 80 inches. It is dark brown sandy loam to a depth of 17 inches, yellowish red sandy clay loam to a depth of 25 inches, and red sandy clay loam below that.

Included with this soil in mapping are small areas of Bonneau, Dothan, Florala, Fuquay, Lucy, Norfolk, and Tifton soils. Also included are a few areas of soils similar to this Orangeburg soil except they have slope of more than 5 percent, they are eroded, they have more than 35 percent clay in the upper part of the subsoil, they have a loamy sand surface layer, or they have a subsoil that is dark red in the upper part. Included in the Eucheeanna Valley are similar soils that have a 20 percent decrease in clay content in the subsoil within a depth of 60 inches. Also included are a few small, wet spots and a few shallow and deep gullies. The included soils make up less than 20 percent of the map unit.

In this Orangeburg soil, the available water capacity is low in the surface layer and moderate in the subsoil. Permeability is moderately rapid in the surface layer and moderate in the subsoil. The organic matter content is low or moderately low. Rainfall is readily absorbed and retained in the soil. Runoff during rain is moderate to rapid in unprotected areas. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly longleaf pine, loblolly pine, slash pine, laurel oak, hickory, and flowering dogwood. Pineland threeawn (wiregrass) is the most common native grass. Other grasses include varieties of bluestem and purple lovegrass.

This Orangeburg soil has moderate limitations for cultivated crops because of the hazard of erosion. A wide variety of cultivated crops is well adapted. Corn and soybeans grow well if properly managed. Moderate erosion control measures are needed. The measures include terraces that have stabilized outlets, and contour cultivation of row crops in alternate strips with cover crops that remain on the soil at least half the time. Soil-improving cover crops and crop residue left on the soil protect the soil from erosion. Maximum yields require good seedbed preparation, fertilizer, and lime.

This soil is well suited to pasture and hay. Tall fescue, coastal bermudagrass, and improved bahiagrass are well adapted. Clovers and other legumes grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields and good soil cover.

The potential productivity for pine trees is moderately high. Plant competition is moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for most urban uses, sanitary facilities, and recreational development. Slope is a moderate limitation for playgrounds. This soil has moderate limitations for sewage lagoons because of seepage and slope. The sidewalls should be sealed in some locations where the subsoil is deepest.

This Orangeburg soil is in capability subclass IIe and in woodland suitability group 11A.

26—Orangeburg sandy loam, 5 to 8 percent slopes. This soil is well drained and sloping. It is on side slopes on uplands. Individual areas of this soil range from 10 to 40 acres. Slopes are concave at the lower part and convex at the upper part.

Typically, the surface layer is dark brown sandy loam 6 inches thick. The subsoil extends to a depth of at least 80 inches. It is red sandy clay loam to a depth of 20 inches and red sandy loam below that.

Included with this soil in mapping are small areas of Bonneau, Dothan, Fuquay, Norfolk, Lucy, and Tifton soils. Also included are a few areas of soils similar to this Orangeburg soil except they have slopes of 2 to 5 percent or more than 8 percent, they are eroded, they have more than 35 percent clay in the upper part of the subsoil, or they have a loamy sand surface layer. A few shallow and deep gullies are also included. The included soils make up less than 25 percent of the map unit.

In this Orangeburg soil, the available water capacity is low in the surface layer and moderate in the subsoil. Permeability is moderately rapid in the surface layer and moderate in the subsoil. The organic matter content is low or moderately low. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly longleaf pine, loblolly pine, slash pine, laurel oak, hickory, and flowering dogwood. Pineland threeawn (wiregrass) is the most common native grass. Other grasses include varieties of bluestem and purple lovegrass.

This Orangeburg soil has moderate limitations for cultivated crops because of the hazard of erosion. A wide variety of cultivated crops is well adapted. Corn and soybeans grow well if properly managed. Intensive erosion control measures are needed. The measures include terraces that have stabilized outlets and row crops in alternate strips with cover crops that remain on the soil at least two-thirds of the time. Soil-improving cover crops and crop residue left on the soil also protect the soil from erosion. Maximum yields require good seedbed preparation, fertilizer, and lime.

This soil is well suited to pasture and hay. Tall fescue, coastal bermudagrass, and improved bahiagrass are well adapted. Clovers and other legumes grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields and good soil cover.

The potential productivity for pine trees is moderately high. Plant competition is moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for some building sites and local roads and streets. It has moderate limitations for small commercial buildings because of slope. Cutting and filling can reduce this limitation. This soil has slight limitations for septic tank absorption fields and sanitary landfills. Slope is a severe limitation for sewage lagoons.

This soil has slight limitations for most recreational development. Slope is a severe limitation for playgrounds.

This Orangeburg soil is in capability subclass IIIe and in woodland suitability group 11A.

27—Rutlege fine sand. This soil is very poorly drained and nearly level. It is in shallow depressions (sometimes called ponds, bays, or sinks) and on stream or creek flood plains and upland flats. Individual areas of this soil range from 5 to 80 acres. Slopes are smooth to concave and are less than 2 percent.

Typically, the surface layer is black fine sand 17 inches thick. The underlying material is fine sand to a depth of at least 80 inches. It is grayish brown to a depth of 22 inches, light brownish gray to a depth of 60 inches, and light gray below that.

Included with this soil in mapping are small areas of Chipley, Hurricane, Leon, Pamlico, and Pickney soils. Also commonly included are soils similar to this Rutlege soil except they have a dark color surface layer less than 10 inches thick, have a dark color subsoil below a depth of 50 inches, have a loamy subsoil that is mixed or stratified below a depth of 60 inches, or have a loamy sand surface layer. The included soils make up less than 30 percent of the map unit.

This Rutlege soil has a high water table at or near the surface for long periods of the year. Shallow ponding is common. Brief flooding is common in areas adjacent to creeks and streams. The available water capacity is high in the surface layer and low in the underlying material. Permeability is rapid throughout. However, internal drainage is slow when impeded by the high water table. Response to artificial drainage is rapid. The organic matter content is high or very high.

The natural vegetation is mostly hardwoods and pond pines or slash and loblolly pines. The understory is huckleberry, myrtle, greenbriers, pineland threeawn (wiregrass), and sedges. Some areas do not have pine trees.

This soil is not suited to cultivated crops because of excessive wetness.

If water control measures are used to remove excess water, this soil is moderately well suited to use as improved pasture. Because of the difficulty of installing these measures and lack of drainage outlets in many areas, this soil is seldom used as pasture.

The potential for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are severe. Surface drainage or bedding is recommended before planting. Loblolly and slash pines are the best trees to plant.

This soil has severe limitations for urban uses and recreational development mainly because of wetness. Extensive drainage and large amounts of fill material would be needed to make this soil suited to these uses.

This Rutlege soil is in capability subclass VIw and in woodland suitability group 9W.

28—Tifton fine sandy loam, 0 to 2 percent slopes. This soil is well drained and nearly level. It is on broad, narrow ridgetops on uplands. Individual areas of this soil range from 5 to 40 acres. Slopes are smooth to concave.

Typically, the surface layer is fine sandy loam 11 inches thick. It is dark brown to a depth of 5 inches and brown below that. The subsoil is yellowish brown to a depth of at least 80 inches. It is gravelly sandy loam to a depth of 18 inches and gravelly sandy clay loam to a depth of 29 inches. To a depth of 55 inches, it is sandy clay loam that has plinthite, and below that, it is sandy loam.

Included with this soil in mapping are small areas of Dothan, Florala, Fuquay, Malbis, Norfolk, and Orangeburg soils. Also included are soils similar to this Tifton soil except they have slopes of 2 to 5 percent, have a sandy loam subsoil below a depth of 60 inches, have more than 20 percent silt in the upper 20 inches of the subsoil, have less than 5 percent plinthite in the lower part of the subsoil, or have a loamy sand or sandy loam surface layer. The included soils make up less than 20 percent of the map unit.

In this Tifton soil, the available water capacity is low in the surface layer and moderate in the subsoil. Permeability is rapid in the surface layer and moderate in the subsoil. The organic matter content is moderately low. Runoff during rains is slow. This soil has a perched high water table at a depth of 42 to 72 inches after heavy rainfall.

The natural vegetation is mostly slash pine, longleaf pine, loblolly pine, southern red oak, laurel oak, dogwood, hickory, and gallberry. Pineland threeawn (wiregrass) is the most common native grass.

This Tifton soil has few limitations for cultivated crops. A wide variety of cultivated crops is well adapted, and corn, soybeans, and peanuts grow well without special erosion control or water control measures. Good seedbed preparation, fertilizer, lime, and crop rotation are all that are needed to keep the soil in good condition. Cover crops need to be alternated with row crops. Crop residue left on the soil protects the soil from erosion.

This soil is well suited to pasture and hay. Tall fescue, coastal bermudagrass, and improved bahiagrass are well adapted. Clovers and other legumes grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields and good soil cover.

The potential productivity for pine trees is high. Plant competition is moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. It has moderate limitations for septic tank absorption fields because of the high water table in wet periods and moderate permeability in the subsoil. Alternative systems or good fill can help overcome this limitation. Seepage is a moderate limitation for sewage lagoons and trench sanitary landfills. If this soil is used for lagoons and landfills, the sidewalls need to be sealed in places where the subsoil is deepest. The seasonal high water table is also a limitation for trench sanitary landfills. This soil has slight limitations for area sanitary landfills.

This soil has slight limitations for most recreational development. Small stones on the surface are a moderate limitation for playgrounds.

This Tifton soil is in capability class I and in woodland suitability group 11A.

29—Tifton fine sandy loam, 2 to 5 percent slopes. This soil is well drained and gently sloping. It is on broad, narrow ridgetops on uplands. Individual areas of this soil range from 5 to 60 acres. Slopes are mostly convex but are concave in places.

Typically, the surface layer is fine sandy loam 9 inches thick. It is dark grayish brown to a depth of 4 inches and dark brown below that. The subsoil extends to a depth of at least 80 inches. It is yellowish brown to a depth of 57 inches and reticulately mottled in shades of brown, red, and gray below that. The subsoil is gravelly fine sandy loam, to a depth of 13 inches, and below that it is gravelly sandy clay loam that has plinthite.

Included with this soil in mapping are small areas of Angie, Dothan, Escambia, Florala, Fuquay, Malbis, and Orangeburg soils. Also included are soils similar to this Tifton soil except they have slopes of 0 to 2 and 5 to 8 percent, an eroded surface layer, less than 5 percent plinthite, a loamy sand or sandy loam surface layer, or more than 20 percent silt in the upper 20 inches of the subsoil. The included soils make up less than 20 percent of the map unit.

In this Tifton soil, the available water capacity is low in the surface layer and moderate in the subsoil. Permeability is rapid in the surface layer and moderate in the subsoil. The organic matter content is moderately low. Runoff during rain is moderate to rapid in unprotected areas. This soil has a perched high water table at a depth of 42 to 72 inches after heavy rainfall.

The natural vegetation is mostly slash pine, longleaf pine, loblolly pine, southern red oak, laurel oak, dogwood, hickory, and gallberry. Pineland threeawn (wiregrass) is the most common native grass.

This Tifton soil has moderate limitations for cultivated crops because of the hazard of erosion. A wide variety of cultivated crops is well adapted, and corn, peanuts, and soybeans grow well if properly managed. Moderate erosion control measures are needed. These measures include terraces that have stabilized outlets; contour cultivation of row crops in alternate strips with cover crops that remain on the soil at least half the time; and crop residue left on the soil. Maximum yields require good seedbed preparation, and applications of fertilizer and lime to the soil.

This soil is well suited to pasture and hay. Tall fescue, coastal bermudagrass, and improved bahiagrass grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields and good soil cover.

The potential productivity for pine trees is high. Plant competition is moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for use as building sites and local roads and streets. It has moderate limitations for septic tank absorption fields because of the high water table during wet periods and the moderate permeability in the subsoil. Alternative systems or fill can overcome these limitations. This soil has moderate limitations for sewage lagoons because of seepage and slope. If used for this purpose, the sides of the lagoons need to be sealed in some locations. This soil has slight limitations for area sanitary landfills and moderate limitations for trench sanitary landfills because of the high water table.

This soil has slight limitations for most recreational development. Small stones and slope are moderate limitations for playgrounds.

This Tifton soil is in capability subclass IIe and in woodland suitability group 11A.

30—Tifton fine sandy loam, 5 to 8 percent slopes. This soil is well drained and sloping. It is on broad, narrow side slopes on uplands. Individual areas of this soil range from 5 to 30 acres. Slopes are mostly convex but are concave in places.

Typically, the surface layer is 9 inches thick. It is very dark grayish brown fine sandy loam in the top 5 inches and dark brown gravelly fine sandy loam below that. The subsoil is sandy clay loam to a depth of at least 80 inches. It is strong brown to a depth of 16 inches, yellowish red to a depth of 21 inches, and yellowish brown to a depth of 56 inches. It is mottled yellowish brown below that.

Included with this soil in mapping are small areas of Angie, Dothan, Escambia, Fuquay, Orangeburg, and Troup soils. Included in a few areas is Tifton soil that has slopes of 2 to 5 percent. Also included are areas of soils similar to Tifton soil except they have a loamy sand or sandy loam surface layer or an eroded surface layer. Areas of Norfolk and Orangeburg soils that have ironstones in the surface layer are included. The included soils make up less than 25 percent of the map unit.

In this Tifton soil, the available water capacity is low in the surface layer and moderate in the subsoil. Permeability is rapid in the surface layer and moderate in the subsoil. The organic matter content is moderately low. Rainfall is rapidly absorbed and retained in the soils. Runoff is rapid in unprotected areas. This soil has a perched high water table at a depth of 42 to 72 inches after heavy rainfall.

The natural vegetation is mostly slash pine, longleaf pine, loblolly pine, southern red oak, laurel oak, dogwood, hickory, and gallberry. Pineland threeawn (wiregrass) is the most common native grass.

This Tifton soil has moderate limitations for cultivated crops because of the hazard of erosion. A wide variety of cultivated crops is well adapted, and corn, peanuts, and soybeans grow well if properly managed. Intensive erosion control measures are needed. These measures include terraces that have stabilized outlets; contour cultivation of row crops in alternate strips with cover crops that remain on the soil at least two-thirds of the time; and crop residue left on the soil. Maximum yields require good seedbed preparation and application of fertilizer and lime to the soil.

This soil is well suited to pasture and hay. Tall fescue, coastal bermudagrass, and improved bahiagrass are well adapted. Clovers and other legumes also grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields and good soil cover.

The potential productivity for pine trees is high. Plant competition is moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for most building sites and local roads and streets. It has moderate limitations for small commercial buildings because of slope. Cutting and filling can overcome this limitation. This soil has moderate limitations for septic tank absorption fields because of the high water table in wet periods and the moderate permeability in the subsoil. Alternative systems or suitable fill can help overcome these limitations. This soil has moderate limitations for sewage lagoons because of seepage and slope. If used for this purpose, the sidewalls need to be sealed in places where the subsoil is deepest. This soil has moderate limitations for trench sanitary landfills because of the high water table. It has slight limitations for area sanitary landfills.

This soil has slight limitations for most recreational development. Slope is a severe limitation for playgrounds.

This Tifton soil is in capability subclass IIIe and in woodland suitability group 11A.

31—Troup sand, 0 to 5 percent slopes. This soil is well drained and nearly level to gently sloping. It is on uplands. Most areas of this soil range from 40 to more than 300 acres; some are as large as 500 acres and others as small as 5 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is dark grayish brown sand 7 inches thick. The subsurface layer is yellowish brown sand to a depth of 16 inches and strong brown and yellowish red loamy sand to a depth of about 51 inches.

The subsoil is red fine sandy loam to a depth of 55 inches and red sandy clay loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Albany, Blanton, Bonifay, Fuquay, Lakeland, and Lucy soils. Also included are small areas of Troup soil that has slopes of 5 to 8 percent. Many areas have soils similar to Troup soil except they have a loamy sand surface layer. The included soils make up less than 15 percent of the map unit.

In this Troup soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low or very low. Rainfall is rapidly absorbed in protected areas, and there is little runoff. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly blackjack oak, bluejack oak, post oak, turkey oak, and scattered longleaf pine. The understory is bluestems, paspalums, and annual forbs. Pineland threeawn (wiregrass) is the most common native grass.

This Troup soil has severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. Soil management should include row crops planted on the contour in alternating strips with close-growing, soil-improving crops that remain on the land at least two-thirds of the time. The cover crops and crop residue left on the soil protect the soil from erosion. Lime and fertilizer are needed. Irrigation of high value crops, such as watermelons, is usually feasible where irrigation water is readily available.

This soil is moderately suited to use as improved pasture. Deep-rooting plants, such as coastal bermudagrass and improved bahiagrass, are well adapted. They grow well and produce good ground cover if lime and fertilizer are added to the soil. Controlled grazing is needed to maintain vigorous plants for maximum yields. Yields are occasionally greatly reduced by extended severe droughts.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for building sites, local roads and streets, and septic tank absorption fields. It has severe limitations for sewage lagoons and area sanitary landfills because of seepage. Sidewalls need to be sealed if this soil is used for sewage lagoons. This soil has severe limitations for trench sanitary landfills because it is too sandy.

This soil has severe limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or eliminate this limitation.

This Troup soil is in capability subclass IIIs and in woodland suitability group 10S.

32—Troup sand, 5 to 8 percent slopes. This soil is well drained and sloping. It is on uplands. Most areas of this soil range from 30 to more than 100 acres; a few areas are as small as 5 acres. Slopes are mostly convex but are concave in places.

Typically, the surface layer is gray sand 4 inches thick. The subsurface layer is loamy sand to a depth of 53 inches. It is yellowish brown to brownish yellow. The subsoil is red to a depth of at least 80 inches. It is sandy loam to a depth of 65 inches and sandy clay loam below that.

Included with this soil in mapping are small areas of Albany, Blanton, Bonifay, Chipley, Fuquay, Lakeland, and Lucy soils. Also included are a few areas of Troup soil that has slopes of less than 5 percent and more than 8 percent. Dothan, Orangeburg, and Cowarts soils are at the head of drainageways. Many areas have soils similar to Troup soil except they have a loamy sand surface layer. A few shallow and deep gullies are in some areas. The included soils make up less than 20 percent of the map unit.

In this Troup soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low or very low. Rainfall is rapidly absorbed in protected areas and there is little runoff. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly blackjack oak, bluejack oak, post oak, turkey oak, and scattered longleaf pine. The understory is bluestem, paspalums, and annual forbs. Pineland threeawn (wiregrass) is the most common native grass.

This Troup soil has very severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. Soil management should include row crops planted on the contour in alternating strips with close-growing, soil-improving crops that remain on the land at least three-fourths of the time. The cover crops and crop residue left on the soil protect the soil from erosion. Lime and fertilizer are needed.

This soil is moderately suited to use as improved pasture. Deep-rooting plants, such as coastal bermudagrass and improved bahiagrass, are well adapted. They grow well and produce good ground cover if lime and fertilizer are added to the soil. Controlled grazing is needed to maintain vigorous plants for maximum yields. Yields are occasionally greatly reduced by extended severe droughts.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and moderate plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for most building sites and local roads and streets. It has moderate limitations for small commercial buildings because of slope, but cutting and filling can easily overcome this limitation. This soil has slight limitations for septic tank absorption fields. It has severe limitations for sewage lagoons and area sanitary landfills because of seepage. Sidewalls need to be sealed if this soil is used for sewage lagoons. This has severe limitations for trench sanitary landfills because it is too sandy.

This soil has severe limitations for recreational development because it is too sandy. Suitable topsoil or some form of surfacing can reduce or overcome this limitation. Slope is also a severe limitation for playgrounds.

This Troup soil is in capability subclass IVs and in woodland suitability group 10S.

33—Troup sand, 8 to 12 percent slopes. This soil is well drained and strongly sloping. It is on side slopes on uplands. Most areas of this soil range from 20 to more than 100 acres; some areas are as small as 5 acres. Slopes are mostly convex but are concave in places.

Typically, the surface layer is grayish brown sand 2 inches thick. The subsurface layer is yellowish brown to yellowish red loamy sand to a depth of 62 inches. The subsoil is red sandy loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Albany, Blanton, Bonifay, Chipley, Cowarts, Fuquay, Lakeland, Lucy, and Orangeburg soils. Also included are a few areas of Troup soils that have slopes of 5 to 8 percent or 12 to 25 percent and a few very small areas that have slopes of more than 30 percent. Soils similar to Troup soil, except they have a loamy sand surface layer, are in many areas. Both deep and shallow gullies are in many areas of this soil. The included soils make up less than 25 percent of the map unit.

In this Troup soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low or very low. Rainfall is absorbed in protected areas, and there is little runoff. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly blackjack oak, bluejack oak, post oak, turkey oak, and scattered longleaf pine. The understory is bluestem, paspalums, and annual forbs. Pineland threeawn (wiregrass) is the most common native grass.

This Troup soil is not suited to cultivated crops and is poorly suited to use as improved pasture. Deep-rooting plants, such as coastal bermudagrass and improved bahiagrass, are well adapted. They grow well and produce good ground cover if lime and fertilizer are added to the soil. Grazing must be greatly restricted to maintain vigorous plants for complete ground cover.

The potential productivity for pine trees is moderately high. Equipment use limitations and seedling mortality are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has moderate limitations for most building sites and local roads and streets because of the slope. Sites for homes need cutting and filling. Slopes are a severe limitation for small commercial buildings. This soil has moderate limitations for septic tank absorption fields because of slope, and the drain field needs to be on the contour of the slope. It has severe limitations for sewage lagoons because of seepage and slope. The sandy texture is a severe limitation for trench sanitary landfills, and seepage is a severe limitation for area sanitary landfills. If this soil is used as sewage lagoons and trench sanitary landfills, the sandy sidewalls need to be sealed.

This soil has severe limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or overcome this limitation. Slope is also a severe limitation for playgrounds.

This Troup soil is in capability subclass VIs and in woodland suitability group 10S.

34—Troup sand, 12 to 25 percent slopes. This soil is well drained and moderately steep. It is on side slopes on uplands. Most areas of this soil range from 5 to 80 acres. Slopes are smooth to convex and concave.

Typically, the surface layer is very dark gray sand 2 inches thick. The subsurface layer is brown to yellow loamy sand to a depth of 64 inches. The subsoil is yellowish red sandy loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Cowarts and Lakeland soils. Troup soil that has slopes of 8 to 12 percent or of more than 25 percent are included in a few areas. A short, steep slope symbol is used for long, narrow slopes of more than 30 percent. Also included in many areas are soils similar to Troup soil except they have a loamy sand surface layer. Both deep and shallow gullies are in many areas. The included soils make up less than 30 percent of the map unit.

In this Troup soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low or very low. Rainfall is rapidly absorbed, but runoff from unprotected areas is rapid during heavy rainfall. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly blackjack oak, bluejack oak, post oak, turkey oak, and scattered longleaf pine. The understory is bluestem, paspalums, and annual forbs. Pineland threeawn (wiregrass) is the most common native grass.

This Troup soil is not suited to cultivated crops nor to use as pasture.

The potential productivity for pine trees is moderately high. The erosion hazard, equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has severe limitations for building sites and local roads and streets because of slope. Proper planning and designs are needed. This soil has severe limitations for septic tank absorption fields. Hillside seepage is the major limitation. Cutting and filling are needed to reduce the slope grade. Seepage and slope are severe limitations for sewage lagoons and area sanitary landfills, and slope and the sandy texture are severe limitations for trench sanitary landfills. The limitations are difficult to overcome for these uses.

This soil has severe limitations for recreation development because of the sandy surface and steep slope. Suitable topsoil or some form of surfacing can reduce the limitations caused by the sandy texture.

This Troup soil is in capability subclass VIIs and in woodland suitability group 10S.

35—Troup-Orangeburg-Cowarts loamy sands, 5 to 12 percent slopes. This map unit consists of well drained soils on sloping to strongly sloping side slopes. Areas of the Troup, Orangeburg, and Cowarts soils are too intricately mixed and too small to be mapped separately at the selected scale. Areas of this map unit range from 3 to 100 acres. Individual areas of soils within the map unit range from less than 1 acre to 3 acres.

Troup soil makes up about 30 to 50 percent of the map unit. Typically, the surface layer is very dark grayish brown sand 2 inches thick. The subsurface is brown to yellowish red loamy sand to a depth of 42 inches. The subsoil is red sandy loam to a depth of 80 inches or more.

In this Troup soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low to very low. Rainfall is rapidly absorbed, and there is little runoff. This soil does not have a high water table within a depth of 6 feet.

Orangeburg soil makes up about 15 to 25 percent of the map unit. Typically, the surface layer is very dark grayish brown loamy sand 6 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 13 inches. The subsoil is yellowish red to a depth of 80 inches or more. It is loamy sand to a depth of 17 inches, sandy loam to a depth of 33 inches, and sandy clay loam below that.

In this Orangeburg soil, the available water capacity is low in the surface layer and moderate in the subsoil. Permeability is rapid in the surface layer and moderate in the subsoil. The organic matter content is low or moderately low. Runoff from unprotected areas is rapid to very rapid. This soil does not have a high water table within a depth of 6 feet.

Cowarts soil makes up about 10 to 20 percent of the map unit. Typically, the surface layer is loamy sand about 6 inches thick. It is very dark grayish brown to a depth of 1 inch and brown below that. The subsurface layer to a depth of 10 inches is yellowish brown loamy sand. The subsoil extends to a depth of 49 inches. It is strong brown to yellowish red sandy clay loam and sandy loam. The substratum is yellowish red loamy sand to a depth of 80 inches or more.

In this Cowarts soil, the available water capacity is low or moderate in the surface and subsurface layers, moderate in the subsoil, and low or moderate in the substratum. Permeability is slow. The organic matter content is low. Rainfall is readily absorbed and retained in the soil. Runoff from unprotected areas is rapid to very rapid. This soil does not have a high water table within a depth of 6 feet.

Included with these soils in mapping are the Albany, Angie, Bonifay, Bonneau, Dothan, Fuquay, Lucy, Norfolk, Pactolus, and Tifton soils. Small seepage spots also occur in a few mapped areas. Small, poorly drained areas in and along narrow stream bottoms and drainageways are shown by drainage symbols. Also included are areas of the Troup, Orangeburg, and Cowarts soils that have slopes of more than 12 percent. These areas are too small and narrow to delineate. In a few areas, either Orangeburg or Cowarts soils are not present. The included soils make up 10 to 45 percent of the map unit.

The natural vegetation is mostly slash pine, loblolly pine, longleaf pine, red oak, water oak, laurel oak, blackjack oak, turkey oak, hickory, magnolia, sweetgum, bay, and holly. The understory is shrubs. The most common grasses are bluestem and pineland threeawn (wiregrass).

The Troup, Orangeburg, and Cowarts soils are very severely limited for cultivated crops because of the hazard of erosion. The soils are poorly suited to row crops because the slopes are too steep to be safely cultivated or effectively terraced. Erosion control measures are limited to the use of vegetative cover. When row crops are grown, they should be planted in narrow strips on the contour with alternating wider strips of close-growing vegetation. A crop rotation needs to keep the soil under close-growing vegetation at least three-fourths of the time. All crop residue needs to be left on the soil to protect it from erosion. Both row crops and close-growing crops require lime and fertilizer for best yields.

These soils are moderately well suited to improved pastures. Tall fescue, coastal bermudagrass, and improved bahiagrass are well suited. Fertilizer, lime, and controlled grazing are needed for best yields and to complete vegetative cover to prevent severe erosion.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

Slope is a moderate limitation to the use of these soils for building sites and local roads and streets. Sites for small commercial buildings and houses can be leveled by cutting and filling. Slope is also a moderate limitation for use for septic tank absorption fields. Seepage and slope are severe limitations for sewage lagoons. The sandy texture severely limits the use of these soils for trench sanitary landfills, and seepage severely limits them for area sanitary landfills. If these soils are used for sewage lagoons or trench sanitary landfills, the sandy sidewalls should be sealed.

The sandy texture is a severe limitation to the use of these soils for recreational development; however, a suitable topsoil or some form of surfacing can reduce this limitation. Slope is an additional limitation for playgrounds.

The Troup, Orangeburg, and Cowarts soils are in capability subclass VIs. Troup soil is in woodland suitability group 10S, and Orangeburg and Cowarts soils are in 11A.

36—Pits. This miscellaneous area consists of open excavations from which sand and loamy material have been removed. The excavations vary from 2 to more than 12 feet deep. The material from these excavations is used mainly in the construction and repair of roads and as fill material for foundations. In some areas mixtures of sandy, loamy, and clayey material are piled or scattered around the edges of the excavations. This material has been mixed to the extent that the identification of individual soils is not possible. Individual mapped areas generally range from 5 to 100 acres. Areas that are too small to be delineated are shown on the map by the two shovel spot symbol. Pits occur throughout the county but have a small total acreage.

Most areas are almost barren. Some pits have been abandoned, but many are still used. In a few areas, especially in areas that have a high water table, water ponds during high rainfall.

Pits have little or no value for agriculture or pine trees; however, pine trees are growing in some older pits. No interpretations, limitations, or potential ratings are given for these areas.

Pits are not assigned a capability subclass or woodland suitability group.

37—Angie sandy loam, 2 to 5 percent slopes. This soil is moderately well drained and gently sloping. It is on uplands. Individual areas of this soil range from 3 to 30 acres.

Typically, the surface layer is dark brown sandy loam 4 inches thick. The subsoil extends to a depth of 35 inches. It is yellowish brown sandy loam to a depth of 6 inches and strong brown to yellowish brown clay below that. The substratum is light olive gray clay to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Bonneau, Dothan, Norfolk, and Shubuta soils. Also included are soils similar to Angie soil except they have a red subsoil, a sandy or loamy substratum, or a loamy sand surface layer. Small, moderately eroded areas of Angie soil and Angie soil that has slopes of less than 2 percent or more than 5 percent are included. The included soils make up less than 20 percent of the map unit.

This soil has a high water table at a depth of 3 to 5 feet during the rainy season. The available water capacity is moderate in the surface layer and low or moderate in the subsoil. Permeability is moderately rapid in the surface layer and slow in the subsoil. The organic matter content is low or moderately low. Runoff in unprotected areas is rapid.

The natural vegetation is mostly loblolly pine, longleaf pine, slash pine, Florida maple, water oak, willow oak, sumac, American holly, southern magnolia, tuliptree, yaupon, common sweetleaf, gallberry, and cedar. Pineland threeawn (wiregrass) and broomsedge bluestem are the most common native grasses.

This Angie soil has moderate limitations for cultivated crops because of the hazard of erosion. The variety of cultivated crops that are well adapted is somewhat limited by occasional wetness. Corn, soybeans, and peanuts grow well if properly managed. Moderate erosion control and water control measures are needed. Rows need to be bedded on the contour in alternate strips with cover crops that remain on the land at least half the time. Soil-improving cover crops and crop residue left on the soil protect the soil from erosion. Maximum yields require good seedbed preparation and additions of fertilizer and lime to the soil. Tile drains to remove excess water during wet seasons are needed for some water-sensitive crops.

This soil is well suited to improved pasture and hay. Tall fescue, clover, coastal bermudagrass, and bahiagrass are well adapted. They grow well if the soil is fertilized and limed. Controlled grazing is needed to maintain vigorous plants for maximum yields and a good ground cover.

The potential productivity for pine trees is high. Equipment use limitations and plant competition are moderate. Loblolly, longleaf, and slash pines are the best trees to plant.

This soil has moderate limitations for building sites because the clayey subsoil shrinks and swells and has low strength. Steel reinforcing rods in the foundation and a base of sand under the foundation reduce these limitations. This soil has moderate limitations for area sanitary landfills because of wetness, and the high water table and clayey texture are severe limitations for trench sanitary landfills. This soil has a severe limitation for septic tank absorption fields because of slow permeability in the subsoil. Low strength is a severe limitation for local roads and streets. This soil has severe limitations for sewage lagoons because of the high water table during wet periods. Special measures are needed to overcome these limitations.

This soil has slight limitations for picnic areas and paths and trails and moderate limitations for camp areas and playgrounds because of slow permeability in the subsoil. Slope is also a moderate limitation for playgrounds.

This Angie soil is in capability subclass IIIe and in woodland suitability group 11W.

38—Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes. This complex consists of Bonneau, Norfolk, and Angie soils on uplands. These soils are sloping to strongly sloping. Bonneau and Norfolk soils are well drained, and Angie soil is moderately well drained. Areas of these soils are too intricately mixed or too small to be mapped separately at the selected scale. The mapped areas range from 3 to 200 acres, but individual areas of soils within the map unit range from less than 1 acre to 3 acres.

Bonneau soil makes up 30 to 40 percent of the complex. Typically, the surface layer is dark grayish brown loamy sand to a depth of 5 inches. The subsurface layer is loamy sand to a depth of 25 inches. It is yellowish brown to a depth of 18 inches and light brownish yellow below that. The subsoil extends to a depth of 68 inches. It is brownish yellow sandy loam to a depth of 28 inches, brownish yellow fine sandy loam and sandy clay loam to a depth of 56 inches, and strong brown sandy clay loam below that. The substratum is mottled sandy loam to a depth of at least 80 inches.

This Bonneau soil has a high water table at a depth of 3.5 to 5.0 feet for brief periods during the wet season. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is moderate. The organic matter content is low or moderately low. Rainfall is rapidly absorbed, but there is some runoff during heavy rains.

Norfolk soil makes up about 25 to 35 percent of the complex. Typically, the surface layer is dark grayish brown loamy sand 5 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 15 inches. The subsoil extends to a depth of 62 inches. It is yellowish brown sandy loam to a depth of 17 inches, and brownish yellow sandy clay loam below that. The substratum is reticulately mottled sandy loam in shades of gray, yellow, brown, and red to a depth of at least 80 inches.

In this Norfolk soil, the available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is moderate. The organic matter content is low or moderately low. Runoff is rapidly absorbed and retained in the soil. Runoff from unprotected areas is very rapid during rain. The high water table is below a depth of 4 feet.

Angie soil makes up 15 to 25 percent of the complex and generally occurs on slopes of less than 7 percent. Typically, the surface layer is dark brown sandy loam 4 inches thick. The subsoil extends to a depth of 35 inches. It is yellowish brown sandy loam to a depth of 6 inches, strong brown clay to a depth of 15 inches, and below that, it is yellowish brown clay that has brown, red, and gray mottles. The substratum is light olive gray clay to a depth of 80 inches.

This Angie soil has a high water table at a depth of 36 to 60 inches during the rainy season. The available water capacity is low or moderate in the surface layer and subsoil. Permeability is moderately rapid in the surface layer and slow in the subsoil. The organic matter content is low or moderately low. Runoff in unprotected areas is very rapid, and erosion is a very severe hazard.

Included with this complex in mapping are the Albany, Bonifay, Cowarts, Orangeburg, Shubuta, and Troup soils. Soils similar to Bonneau and Norfolk soils except they have a loamy sand or sand substratum within a depth of 40 to 60 inches are also included. Included are soils on nearly level ridgetops that are too small and narrow to delineate and areas of soils similar to Bonneau soil except they have gray mottles below a depth of 60 inches. Also included at the heads of the drainageways are areas of soils that have short, steep slopes, and in a seepage area below the drainageways are various soils that are somewhat poorly drained and poorly drained. About 10 to 30 percent of this complex has slopes of 12 to 25 percent, and about 2 to 5 percent is very small areas of soils that have slopes as steep as 70 percent. These small areas are generally at stream heads. Some areas do not have Angie soils. The included soils make up 10 to 45 percent of the complex.

The natural vegetation is mostly loblolly pine, longleaf pine, slash pine, Florida maple, American holly, willow oak, sumac, water oak, tuliptree, southern magnolia, yaupon, common sweetleaf, gallberry, cedar, hickory, greenbrier, dogwood, and huckleberry. Pineland threeawn (wiregrass) and broomsedge bluestem are the most common native grasses.

The soils of this complex have very severe limitations for cultivated crops because of the hazard of erosion. Steepness of slope further limits the suitability by making cultivation more difficult. Conservation tillage helps control erosion and conserve moisture. A crop rotation should keep the land under close-growing crops at least two-thirds of the time. Fertilizer and lime are needed. Cover crops and crop residue left on the land protect the soil from erosion. The soils in this complex are too steep for irrigation to be feasible.

The soils of this complex are moderately well suited to use as pasture. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted. Steepness of slope increases the hazard of erosion and reduces potential yields. Good stands of grass can be produced by adding fertilizer and lime to the soil. Controlled grazing is needed to maintain plant vigor to provide good protective cover.

The potential productivity of pine trees is high. Equipment use limitations and seedling mortality are moderate. Slash, longleaf, and loblolly pines are the best trees for planting.

The soils of this complex have moderate limitations for septic tank absorption fields and area sanitary landfills because of the high water table during wet periods and the steepness of slope. Alternative systems, shaping, or fill can reduce the limitations for septic tank absorption fields. These soils have severe limitations for trench sanitary landfills and sewage lagoons because of the high water table. They have moderate limitations for building sites and local roads and streets and severe limitations for commercial buildings because of slope. Cutting and leveling can reduce this limitation.

These soils have moderate limitations for recreational development because of the sandy surface layer and steepness of slope. Slope is also a severe limitation for playgrounds. Suitable topsoil can overcome the sandy problem.

This complex is in capability subclass IVe. Bonneau soil is in woodland suitability group 11S, Norfolk soil is in 11A, and Angie soil is in 11W.

39—Pantego loam, depressional. This soil is very poorly drained and nearly level. It is in depressions. Individual areas of this soil range from 5 to 30 acres. Slopes are concave to flat and are less than 2 percent.

Typically, the surface layer is very dark gray loam 17 inches thick. The subsoil extends to a depth of at least 80 inches. It is dark gray sandy clay loam to a depth of 35 inches and gray sandy clay loam below that.

Included with this soil in mapping are soils similar to Pantego soil except they have a thin muck or mucky loam surface layer, a finer textured subsoil, or a dark surface layer less than 8 inches thick. Also included are Albany, Bibb, Escambia, Dorovan, Johnston, Kinston, Leefield, Pamlico, and Stilson soils. The included soils make up less than 25 percent of the map unit; however, the proportion and composition of each mapped area is variable.

This Pantego soil has a high water table above or at the surface from December to May. Ponding is common for 3 to 6 months, and water is about 1 foot above the surface in most years (fig. 9). The available water capacity is moderate or high throughout. Permeability is moderately rapid in the surface layer and moderate in the subsoil. The organic matter content is high. Adequate outlets for artificial drainage systems are generally not available.

The natural vegetation is mostly pond pine, baldcypress, blackgum, sweetbay, and red maple.

This Pantego soil is not suited to cultivated crops or pasture in its natural state.

The potential productivity of pine trees is high if a good water control system is installed before planting. Equipment use limitations, plant competition, and seedling mortality are severe, and the windthrow hazard is moderate. Slash and loblolly pines are the best trees to plant.

This soil is not suited to urban or recreational development. Ponding and wetness are severe limitations that are not practical to overcome.

This Pantego soil is in capability subclass VIw and in woodland suitability group 7W.

40—Escambia sandy loam, 0 to 2 percent slopes. This soil is somewhat poorly drained and nearly level. It is in low areas on uplands. Individual areas of this soil range mostly from 10 to more than 100 acres; a few areas are as small as 5 acres. Slopes are smooth to concave.

Typically, the surface layer is sandy loam 17 inches thick. It is very dark gray to a depth of 5 inches, dark grayish brown to a depth of 9 inches, and yellowish brown below that. The subsoil to a depth of 67 inches is yellowish brown fine sandy loam that has mottles. The substratum is reticulately mottled loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Albany, Dothan, Florala, Fuquay, Leefield, Malbis, Pantego, and Stilson soils and a few areas of Escambia soil that has slope of 2 to 5 percent. Also included are areas of soils similar to Escambia soil except they have a sandy clay and clay loam subsoil, have a dark color surface layer more than 10 inches thick, are moderately well drained and poorly drained, do not have plinthite and are sandy within a depth of 60 inches, or have less than 20 percent silt in the upper 20 inches of the subsoil and are generally in association with Dothan and Fuquay soils. The included soils make up less than 20 percent of the map unit.

This Escambia soil has a high water table at a depth of 18 to 30 inches for 1 to 4 months annually. In about 25 to 35 percent of this soil, the water table is at a depth of 10 to 18 inches for short periods. The available water capacity is moderate or high in the surface layer and low to high in the subsoil. Permeability is moderately rapid in the surface layer, moderate in the upper part of the subsoil, and moderately slow or slow in the lower part. The organic matter content is low or moderately low. The internal drainage rate under natural conditions is slow, and response to artificial drainage is moderate.

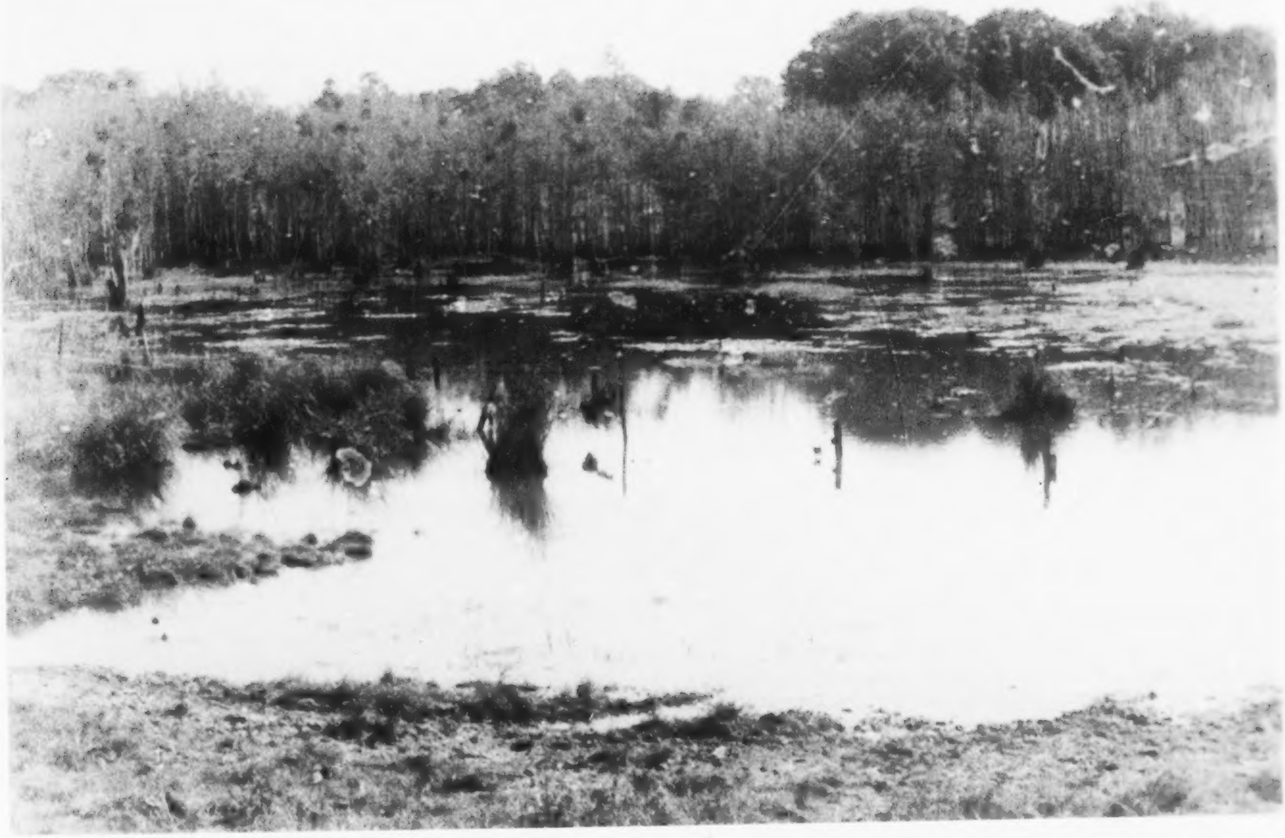

Figure 9.--Water ponds on Pantego loam, depressional, for long periods in most years. The ponded areas are used by wildlife.

The natural vegetation is mostly longleaf, loblolly, and slash pines. The understory is gallberry and waxmyrtle. Pitcherplants are in poorly drained areas. The most common native grass is pineland threeawn (wiregrass). Other grasses are bluestem, panicum, carpetgrass, and longleaf uniola.

This Escambia soil has moderate limitations for cultivated crops. The variety of adapted cultivated crops is somewhat limited by occasional wetness. Corn and peanuts are adapted if properly managed. Management can include simple ditching to remove excess surface water during rains, crop rotations that include cover crops on the land at least half the time, and crop residue left on the ground to protect the soil from erosion. Maximum yields require good seedbed preparation and additions of fertilizer and lime to the soil.

This soil is well suited to pasture and hay. Improved pasture plants, such as clovers, tall fescue, coastal bermudagrass, and improved bahiagrass, grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields.

The potential productivity of pine trees is high. Equipment use limitations and windthrow hazard are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has moderate limitations for use as building sites and local roads and streets because of the high water table during wet periods. It has severe limitations for septic tank absorption fields because of the high water table and the moderately slow or slow permeability in the lower part of the subsoil. Alternative systems or suitable fill can reduce these limitations. The high water table is a severe limitation for sanitary landfills, and seepage is a moderate limitations for sewage lagoons.

This soil has moderate limitations for recreational development. Wetness and moderately slow or slow permeability are the main problems to overcome.

This Escambia soil is in capability subclass IIw and in woodland suitability group 11W.

41—Maurepas muck, frequently flooded. This soil is nearly level and very poorly drained. It is on low, broad flood plains consisting mostly of hardwood swamps on flood plains of the Choctawhatchee River and its tributaries.

Typically, this soil is very dark grayish brown muck about 4 inches thick underlain by black and very dark gray muck that has a high content of mineral material to a depth of at least 65 inches.

Included with this soil in mapping are areas of Rutlege and Pamlico soils at the edge of delineations. "Islands" of Bibb, Chipley, Foxworth, and Kinston soils are the most significant of the minor soils and occur most often near the stream and river banks. Also included are areas of soils similar to Maurepas soil except they have less than 51 inches of organic material that is underlain by soft, sandy clay loam.

The high water table is at the surface for 8 to 12 months. This soil has more than a 50 percent chance of flooding in any one year for very long periods. Permeability is moderately slow or moderate. The available water capacity is very high. The organic matter content is very high. Response to drainage is moderate.

The natural vegetation is dominantly baldcypress and blackgum. Cypress is more common in areas that stay ponded for long periods. Red maple, sweetgum, redbay, sweetbay, and water tupelo are along stream and river banks. The understory consists of giant cane and greenbrier.

This Maurepas soil has a very severe limitation for cultivated crops and pastures because of frequent flooding and ponding. Under natural conditions it is not suited to these uses, but flood protection and drainage systems can help overcome some of the problems.

This soil is not suited to the production of slash, loblolly, and longleaf pines because of the excessive high water table and low strength.

This soil is not suited to urban or recreational development. Wetness, the hazard of flooding, and poor soil quality are severe limitations that are not practical to overcome.

This Maurepas soil is in capability subclass VIIIw and in woodland suitability group 6W.

42—Blanton sand, 0 to 5 percent slopes. This soil is moderately well drained and nearly level to gently sloping. It is on uplands and in elevated areas of the flatwoods. Individual areas of this soil range mostly from 10 to more than 200 acres in size; some areas are as small as 5 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is brown sand 6 inches thick. The subsurface layer extends to a depth of 65 inches. It is yellowish brown loamy fine sand to a depth of 16 inches. Below that it is light yellowish brown, very pale brown, and light gray fine sand. The subsoil extends to a depth of at least 80 inches. It is light yellowish brown loamy fine sand to a depth of 70 inches and pale brown and light brownish gray fine sandy loam below that.

Included with this soil in mapping are small areas of Albany, Bibb, Bonifay, Chipley, Foxworth, Fuquay, Lakeland, Leefield, Johnston, Kinston, Rutlege, Troup, and Stilson soils. The included soils make up less than 20 percent of the map unit.

This Blanton soil has a perched high water table at a depth of 60 to 72 inches for 1 to 3 months. It does not have a high water table within a depth of 6 feet for the rest of the year. The available water capacity is moderate or high in the surface layer, very low to moderate in the subsurface layer, and low or moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate or moderately slow in the subsoil. The organic matter content is low. Rainfall is readily absorbed, and there is little runoff.

The natural vegetation is mostly slash, loblolly, and longleaf pine. The understory is live oak, post oak, bluejack oak, turkey oak, laurel oak, water oak, yaupon, dogfennel, huckleberry, and dogwood. Pineland threeawn (wiregrass) is the most common native grass.

This Blanton soil has severe limitations for most cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. Row crops need to be planted on the contour in alternating strips with close-growing crops that remain on the soil at least two-thirds of the time. Soil-improving cover crops and crop residue left on the soil protect the soil from erosion. Irrigation of high value crops is usually feasible where water is readily available.

This soil is moderately well suited to pasture and hay. Deep-rooting coastal bermudagrass and improved bahiagrass are well adapted, but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Controlled grazing is needed to maintain plant vigor and a good ground cover.

The potential productivity of pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for building sites, septic tank absorption fields, and local roads and streets. It has severe limitations for sewage lagoons and area sanitary landfills because of seepage. The sandy texture is a severe limitation for trench sanitary landfills. If this soil is used for sewage lagoons and sanitary landfills, the sandy sidewalls need to be sealed.

This soil has severe limitations for recreational development because the sandy surface causes poor trafficability. Suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Blanton soil is in capability subclass IIIs and in woodland suitability group 11S.

43—Kinston-Bibb association, frequently flooded. This association consists of soils that are nearly level and poorly drained. These soils formed in sandy, loamy, and clayey fluvial deposits along old meandrous stream channels, sloughs, slight ridges, and depressions on flood plains of the Choctawhatchee River. They generally are in a regular and repeating pattern with the Bibb soil closer to the river, old riverbeds, and channels, and the Kinston soil away from the river and near the outside banks. Individual areas range from 20 to more than 1,000 acres. Slopes range from 0 to 2 percent.

Kinston soil makes up 35 to 55 percent of the association. Typically, the surface layer is brown loam 10 inches thick. The underlying material is mostly gray sandy clay loam to a depth of 50 inches. It is light gray clay loam to a depth of at least 80 inches. Thin strata of loamy sand and sand occur throughout.

This Kinston soil has a high water table within 10 inches of the surface for more than 6 months in most years. It has more than a 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The root zone is limited by the high water table. The available water capacity is moderate or high throughout. Permeability is moderately rapid in the surface layer and moderate in the underlying material. The organic matter content is moderate. Internal drainage is slow, but response to drainage is moderate.

Bibb soil makes up 30 to 45 percent of the association. Typically, the surface layer is dark gray and dark grayish brown loam 12 inches thick. The underlying material extends to a depth of at least 65 inches. To a depth of 37 inches, it is grayish brown sandy loam that has mottles in shades of brown. It is light brownish gray sand below that.

This Bibb soil has a high water table within 18 inches of the surface for 1 to 4 months each year. It has more than a 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The root zone is limited by the high water table. The available water capacity is moderate or high throughout. Permeability is moderately rapid. The organic matter content is low or moderately low. The internal drainage is slow, but response to artificial drainage is rapid.

Included with this association in mapping are small areas of soils next to the river and old river channels that are slightly elevated, better drained, and mostly sandy. Some of these soils have a loamy subsoil. Also included are areas of soils that are very poorly drained. These soils are in old river and stream channels that are covered with water most of the year. Small areas of Pantego and Pamlico soils also occur near the outer edge of some delineations. The included soils make up as much as 35 percent of the map unit.

The natural vegetation consists mostly of sweetgum, cypress, loblolly pine, ash, blackgum, and several species of oak (fig. 10). The understory consists of greenbrier, holly, maidencane, and muscadine vines.

These soils are not suited to cultivated crops or pastures because of wetness and flooding.

The potential productivity for pine trees is moderate. Equipment use limitations, seedling mortality, and plant competition are severe. Surface drainage and bedding are recommended before planting trees. Loblolly and slash pines are the best trees to plant.

These soils are not suited to urban or recreational development. Wetness and the hazard of flooding are severe limitations that are not practical to overcome.

The Kinston soil is in capability subclass VIw, and the Bibb soil is in capability subclass Vw. Kinston soil is in woodland suitability group 11W, and Bibb soil is in 9W.

44—Lakeland-Troup-Urban land complex, 0 to 5 percent slopes. This complex is 40 percent Lakeland soil, 25 percent Troup soil, and about 20 percent urban land. The urban land is intricately mixed with the Lakeland and Troup soils.

Typically, Lakeland soil has a surface layer of dark grayish brown sand about 4 inches thick. The underlying material is sand to a depth of at least 80 inches. It is yellowish brown to a depth of 11 inches, brownish yellow to a depth of 60 inches, and light yellowish brown below that.

This Lakeland soil is excessively drained. The available water capacity is low or very low. Permeability is rapid. This soil does not have a high water table within a depth of 6 feet.

Typically, Troup soil has a surface layer of dark grayish brown sand about 7 inches thick. The subsurface layer extends to a depth of about 51 inches. It is yellowish brown sand to a depth of 16 inches and strong brown and yellowish red loamy sand below that. The subsoil is red fine sandy loam to a depth of 55 inches and red sandy clay loam to a depth of at least 80 inches.

This Troup soil is well drained. The available water capacity is low or moderate in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. This soil does not have a high water table within a depth of 6 feet.

The Urban land part of this complex consists of streets, parking lots, buildings, and other structures that obscure or alter the soils.

Included in mapping and making up about 10 percent of the map unit are areas of Bonifay soils.

The soils in this complex not covered by manmade objects are mostly used for lawn grasses and shrubs. Regular watering and applications of fertilizer are needed for good lawns. Longleaf pine and a variety of oaks are common.

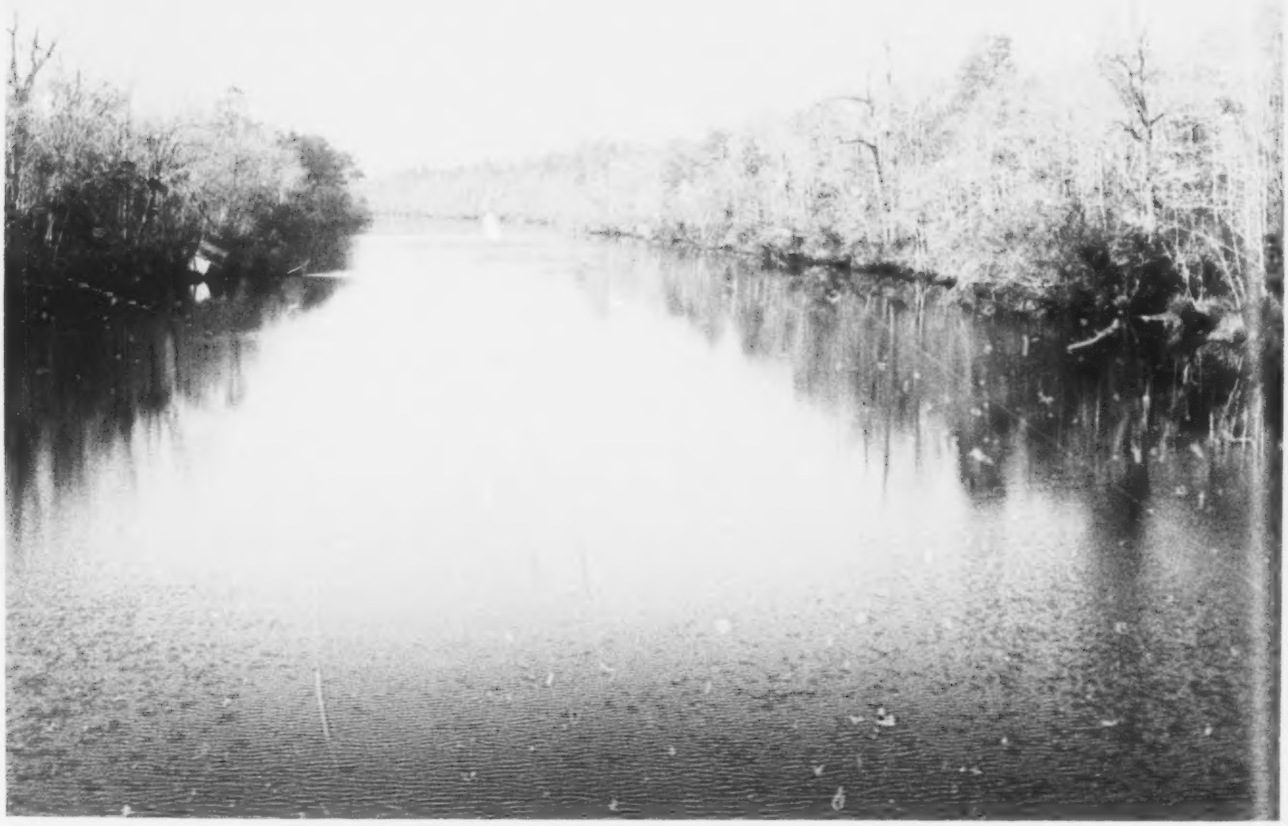

Figure 10.—The natural vegetation on Kinston-Bibb association, frequently flooded, includes hardwoods.

Present land use precludes the use of the soils in this complex for cultivated crops, pasture, or woodland.

This complex has not been assigned to a capability subclass or woodland suitability group.

45—Dirego muck, frequently flooded. This soil is very poorly drained and is frequently flooded by brackish water. It is on broad, level tidal marshes that border the Choctawhatchee Bay. Individual areas of this soil range from 10 to 400 acres. Slopes are smooth and less than 1 percent.

Typically, the surface layer is muck about 48 inches thick. It is black to a depth of 40 inches and very dark gray below that. The substratum is dark olive gray fine sand to a depth of at least 65 inches.

Included with this soil in mapping are small areas of Maurepas soils. Also included are narrow, sandy areas of soils along the banks of streams and rivers. The included soils make up less than 25 percent of the map unit.

This Dirego soil has a high water table that is at or above the soil surface for more than 9 months annually. It has more than a 50 percent chance of flooding in any one year for very long periods. The available water capacity is high or very high in the surface layer and moderate in the substratum. Permeability is rapid, but it is impeded by the high water table. The organic matter content is very high.

The natural vegetation consists of salt-tolerant plants, such as black needlerush, big cordgrass, smooth cordgrass, marshhay cordgrass, and row grass (fig.11).

This soil is not suited to cultivated crops, pasture grasses, or woodland. The potential for these uses is very low because of frequent flooding, high salt content, and high sulfur content.

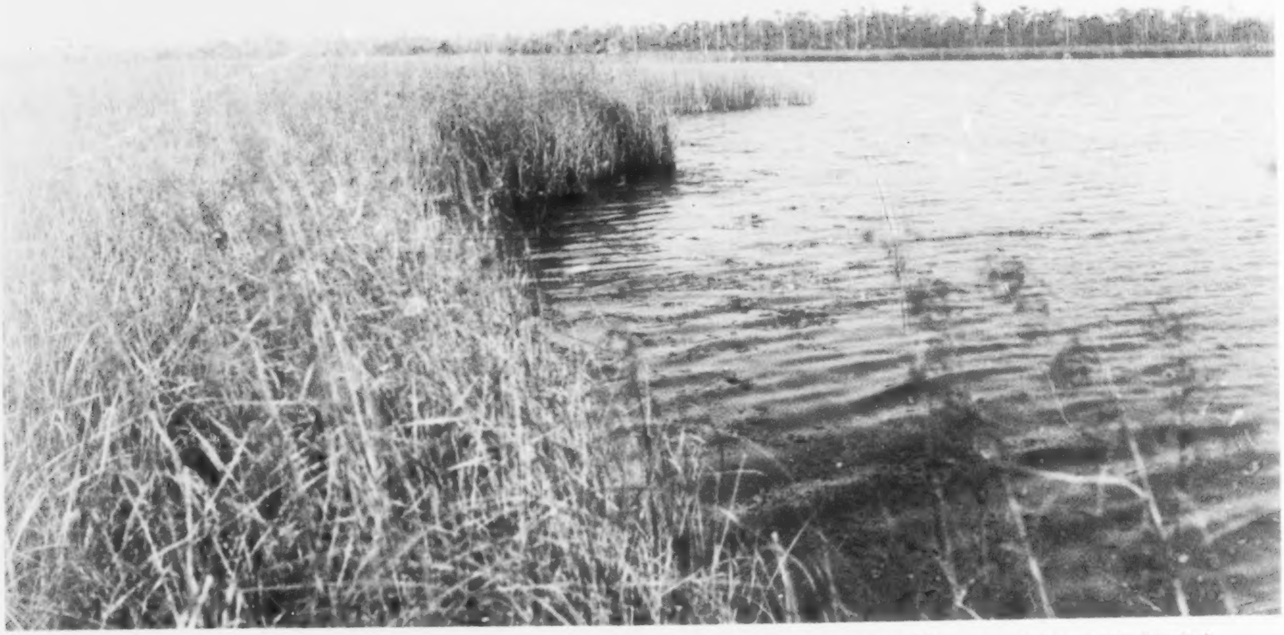

Figure 11.—Black needlerush, smooth cordgrass, and marshhay cordgrass are common on Dirego muck, frequently flooded.

This soil is not suited to urban or recreational development. Wetness and the hazard of flooding are severe limitations that are not practical to overcome.

This Dirego soil is in capability subclass VIIIw. It has not been assigned to a woodland suitability group.

46—Norfolk loamy sand, 2 to 5 percent slopes. This soil is well drained and gently sloping. It is on broad and narrow ridgetops on uplands. Individual areas of this soil range mostly from 3 to 50 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is dark grayish brown loamy sand about 3 inches thick. The subsurface layer is brown to yellowish brown loamy sand to a depth of about 15 inches. The subsoil extends to a depth of 62 inches. It is brownish yellow sandy loam to a depth of 17 inches and brownish yellow to strong brown sandy clay loam below that. The substratum is mottled sandy loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Angie, Bibb, Bonifay, Bonneau, Cowarts, Dorovan, Dothan, Florala, Fuquay, Kenansville, Kinston, Lucy, Pamlico, and Troup soils. Also included are areas of soils that have a sandy substratum at a depth of 40 to 60 inches and a few areas of Norfolk soil that has slopes of 0 to 2 percent and 5 to 8 percent. The included soils make up less than 20 percent of the map unit.

This Norfolk soil has a high water table at a depth of 4 to 6 feet for brief periods during the wet seasons. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is moderate. The organic matter content is low or moderately low. Runoff is moderate in protected areas and rapid in unprotected areas.

The natural vegetation is mostly loblolly pine, longleaf pine, slash pine, Florida maple, American holly, willow oak, sumac, water oak, tuliptree, sweetgum, cedar, hickory, yaupon, southern magnolia, dogwood, gallberry, and huckleberry. Pineland threeawn (wiregrass) and broomsedge bluestem are the most common native grasses.

This Norfolk soil has moderate limitations for cultivated crops because of the hazard of erosion, but a wide variety of cultivated crops are well adapted. Corn and soybeans grow well if properly managed. Conservation tillage can help control erosion and conserve moisture. Moderate erosion control measures are needed. These measures include terraces that have stabilized outlets; contour cultivation of row crops in alternate strips with cover crops that remain on the soil at least half the time; and crop residue left on the soil. Maximum yields require good seedbed preparation and additions of fertilizer and lime to the soil.

This soil is well suited to pasture and hay. Tall fescue, coastal bermudagrass, and improved bahiagrass are well adapted. Clovers and other legumes are also adapted and grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields and good soil cover.

The potential productivity for pine trees is high, and there are no serious concerns in management. Slash and loblolly pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. It has moderate limitations for septic tank absorption fields because of the high water table during periods of high rainfall. Alternative systems can reduce this limitation. This soil has slight limitations for sanitary landfills. Seepage is a moderate limitation for sewage lagoons. The sidewalls need to be sealed in some locations where the subsoil is deepest.

This soil has slight limitations for most recreational development. Slope is a moderate limitation for playgrounds.

This Norfolk soil is in capability subclass IIe and in woodland suitability group 11A.

47—Bonneau loamy sand, 0 to 5 percent slopes. This soil is well drained and nearly level to gently sloping. It is on broad ridgetops on uplands. Individual areas of this soil range from 5 to 50 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is gray loamy sand 4 inches thick. The subsurface layer is light yellowish brown loamy sand to a depth of 25 inches. The subsoil is yellowish brown to a depth of at least 80 inches. It is sandy loam to a depth of 27 inches and sandy clay loam below that.

Included with this soil in mapping are small areas of Angie, Bonifay, Cowarts, Dothan, Florala, Fuquay, Leefield, Norfolk, Stilson, and Troup soils. Also included are areas of soils that have a sandy substratum at a depth of 40 to 60 inches, some areas of soils that have gray and light gray mottles below a depth of 60 inches, and a few areas of soils that have slopes of 5 to 8 percent. The included soils make up less than 20 percent of the map unit.

This Bonneau soil has a high water table at a depth of 42 to 60 inches for brief periods during the wet season. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is moderate. The organic matter content is low. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation is mostly loblolly pine, longleaf pine, slash pine, Florida maple, American holly, willow oak, sumac, water oak, tuliptree, gallberry, sweetgum, cedar, hickory, yaupon, southern magnolia, dogwood, and huckleberry. Pineland threeawn (wiregrass) and broomsedge bluestem are the most common native grasses.

This Bonneau soil has moderate limitations for cultivated crops because of poor soil qualities. It can be cultivated safely with ordinary good farming methods, but droughtiness and rapid leaching of plant nutrients limit the choice of crops and the potential yields of adapted crops. Conservation tillage helps control erosion and conserve moisture. With good management, such crops as corn, soybeans, and peanuts can be grown. Crop rotations need to include cover crops that remain on the soil at least half the time. These cover crops and crop residue left on the ground protect the soil from erosion. Best yields require good seedbed preparation and regular applications of fertilizer and lime. Irrigation is usually feasible where irrigation water is readily available.

This soil is well suited to use as pasture. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted. This soil responds well to fertilizer and lime. Controlled grazing is important to maintain vigorous plants for maximum yields and good cover.

The potential productivity of pine trees is moderately high. Equipment use limitations, plant competition, and seedling mortality are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. It has moderate limitations for septic tank absorption fields and area sanitary landfills because of the high water table. Alternative systems or fill can overcome the limitations for septic tank absorption fields. The high water table is also a severe limitation for trench sanitary landfills. Seepage is a severe limitation for sewage lagoons. The sandy sidewalls of the lagoons need to be sealed.

This soil has moderate limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or overcome this limitation. Slope is a moderate limitation for playgrounds.

This Bonneau soil is in capability subclass IIs and in woodland suitability group 10S.

48—Yemassee-Garcon-Bigbee complex, ocassionally flooded. This complex consists of soils that are nearly level to gently sloping. Yemassee and Garcon soils are somewhat poorly drained, and Bigbee soil is excessively drained. These soils are on terraces on flood plains along streams. Areas of this map unit range from 3 to 100 acres. Individual areas of soils within the map unit range from 1 acre to 3 acres. Slopes are smooth to concave and convex. They generally range between 0 and 3 percent, but they can range up to 5 percent. Areas of these soils are too intricately mixed and too small to be mapped separately at the selected scale.

Yemassee soil makes up about 30 to 40 percent of the complex. Typically, the surface layer is very dark gray loamy sand 8 inches thick. The subsurface layer is loamy sand to a depth of 17 inches. It is dark grayish brown to a depth of 13 inches and brown below that. The subsoil is grayish brown and gray sandy clay loam to a depth of 50 inches. The substratum is light gray sand and dark grayish brown fine sand to a depth of more than 80 inches.

This Yemasse soil has a high water table at about 12 to 18 inches below the surface for about 2 to 4 months during the winter and early in spring. This soil has a 10 to 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The available water capacity is low to high. Permeability is moderately rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low to moderate. The internal drainage rate under natural conditions is low, but response to artificial drainage is moderately rapid.

Garcon soil makes up about 20 to 30 percent of the complex. Typically, the surface layer is loamy fine sand 18 inches thick. It is very dark gray to a depth of 8 inches and dark grayish brown below that. The subsurface layer is pale brown loamy fine sand to a depth of 28 inches. The subsoil extends to a depth of 51 inches. It is brown sandy loam to a depth of 34 inches and light grayish brown and gray sandy clay loam below that. The substratum is white sand to a depth of at least 80 inches.

This Garcon soil has a high water table less than 20 inches below the surface for 4 to 6 months and below 40 inches for more than 6 months. It has a 10 to 15 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The available water capacity is moderate or low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is moderately low or moderate.

Bibbee soil makes up about 15 to 25 percent of the complex. Typically, the surface layer is loamy sand 8 inches thick. It is grayish brown to a depth of 2 inches and brown below that. The substratum is pale brown, light gray, and white sand to a depth of at least 80 inches.

This Bigbee soil has a high water table between depths of 20 and 40 inches for about 2 weeks and at a depth of 40 to 70 inches for 1 to 2 months each year. It has a 10 to 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The available water capacity is low, and permeability is rapid throughout. Natural fertility and organic matter content are very low. Rainfall is rapidly absorbed, and there is little runoff.

Included with this complex in mapping are Bibb, Johnston, Kinston, Leon, Mandarin, Pamlico, Pantego, and Rutlege soils and areas of soils similar to Garcon and Yemassee soils except they have a silty clay loam or silty clay subsoil. Also included are areas of soils that are well drained and sandy. These soils have a loamy subsoil within a depth of 40 inches that is underlain by sandy layers at a depth of less than 60 inches. Soils that are poorly drained or somewhat poorly drained and sandy are also included. In these soils, the upper part of the subsoil is sandy and dark in color, and the lower part is loamy. The included soils make up about 25 percent of the map unit.

The natural vegetation is mostly southern red oak, laurel oak, live oak, willow oak, water oak, yaupon, slash pine, loblolly pine, longleaf pine, sweetgum, American holly, red maple, sweetbay, blueberry, huckleberry, gallberry, common sassafrass, and sawpalmetto. The most common native grass is pineland threeawn (wiregrass). Other grasses are bluestem and panicums.

These soils have moderate limitations for cultivated crops because of wetness and flooding. They are well suited to some cultivated crops, but the variety is limited by the seasonal high water table. Corn and soybeans are adapted only if these soils are properly drained. Tile drains or open ditches are needed. Row crops need to be planted in rotation with cover crops that remain on the land at least half the time. Soil-improving cover crops and crop residue left on the soil protect the soil from erosion. For best yields, good seedbed preparation, fertilizer, and lime are needed.

These soils are well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well with good management. White clovers and other legumes are moderately adapted. For best yields, these soils require fertilizer and lime, and carefully controlled grazing is needed to maintain plant vigor.

These soils have high potential productivity for pine trees. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

These soils have severe limitations for use as building sites and local roads and streets because of the high water table and the hazard of flooding (fig. 12). To reduce these limitations, houses and buildings can be elevated. These soils have severe limitations for sanitary facilities because of flooding, slow percolation and the high water table.

These soils have moderate limitations for most recreational development because of the seasonal high water table. The hazard of flooding is a severe limitation for camp sites.

This complex is in capability subclass IIw. Yemassee soil is in woodland suitability group 11W, Garcon soil is in 10W, and Bigbee soil is in 10S.

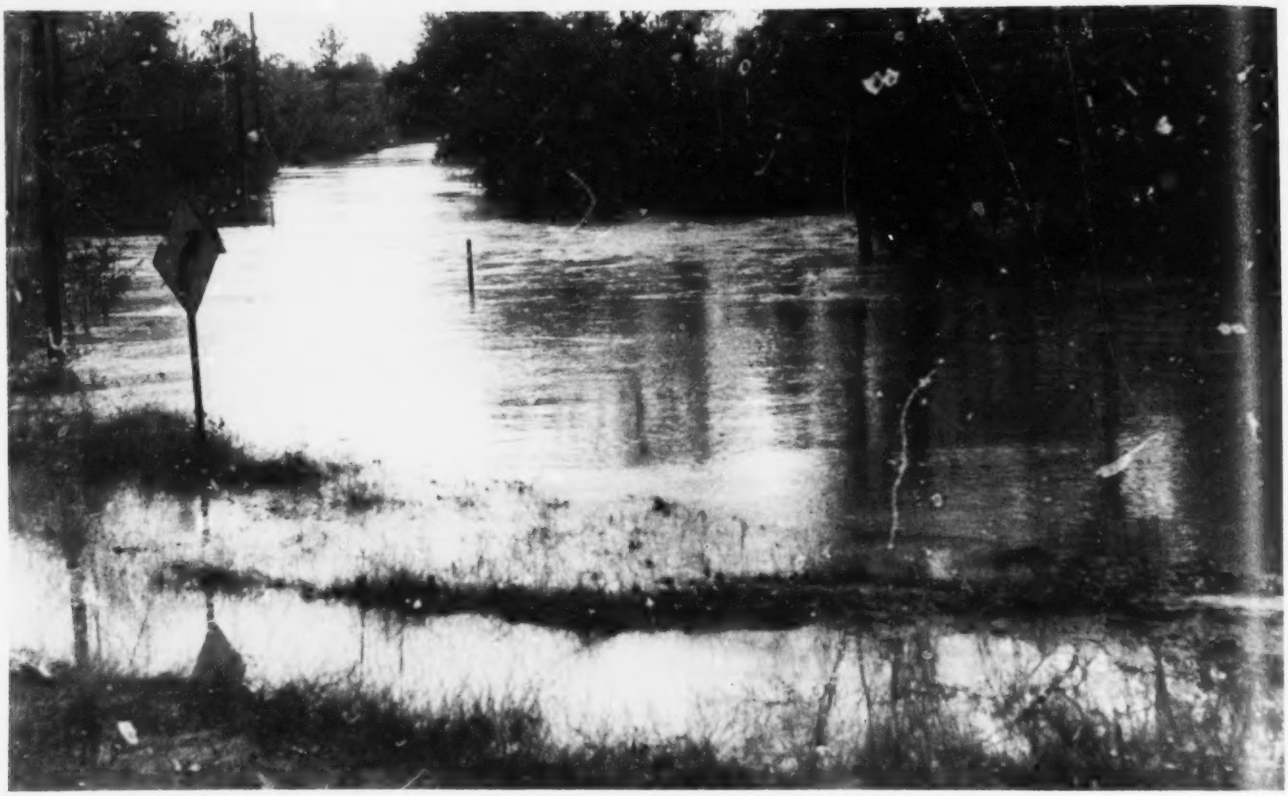

Figure 12.—Roads and bridges are flooded during periods of heavy rainfall on Yemassee-Garcon-Bigbee complex, occasionally flooded.

49—Eglin sand, 0 to 5 percent slopes. This soil is somewhat excessively drained and nearly level to gently sloping. It is on low uplands. Individual areas of this soil range mostly from 10 to 200 acres; some areas are as small as 3 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is dark grayish brown sand 2 inches thick. The subsurface layer is sand to a depth of 68 inches. It is yellowish brown to a depth of 5 inches, light yellowish brown to a depth of 62 inches, and yellowish brown below that. The subsoil is sand to a depth of at least 80 inches. It is dark brown to a depth of 75 inches and dark reddish brown below that.

Included with this soil in mapping are small areas of Chipley, Foxworth, Hurricane, and Lakeland soils. Also included are some areas of soils that have a light gray, compact fine and very fine sand layer above the subsoil and some areas of soils that have gray mottles above a depth of 40 inches. Small areas of soils similar to Eglin soil except they have thinner coatings of organic matter on the sand grains are included. The included soils make up less than 20 percent of the map unit.

This Eglin soil does not have a high water table within a depth of 6 feet. In most years, the high water table is between depths of 72 and 80 inches in winter and early in spring. After heavy rains, the water table can rise to a depth of 60 inches for periods of less than 1 month. The available water capacity is low in the surface and subsurface layers and low to moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate or moderately rapid in the subsoil. The organic matter content is low or moderately low.

Natural vegetation is mostly sand pine, longleaf pine, live oak, laurel oak, post oak, bluejack oak, and turkey oak. The understory is huckleberries, few scattered sawpalmetto, woody goldenrod, broomsedge bluestem, and pineland threeawn (wiregrass).

This Eglin soil has very severe limitations for cultivated crops. Droughtiness and rapid leaching of plant nutrients limit the choice of plants and reduce potential yields of adapted crops. In wet seasons, the availability of water in the root zone is provided through capillary rise. In dry seasons, the water table drops well below the root zone and little capillary water is available to plants.

Conservation tillage helps conserve moisture and control erosion. Crop rotations need to include close-growing crops that remain on the land at least three-fourths of the time. Lime and fertilizer are needed. Soil-improving cover crops and crop residue need to be left on the land during critical erosion periods. Irrigation on high value crops is usually feasible where irrigation water is readily available.

This soil is moderately suited to pasture and hay. Coastal bermudagrass and bahiagrass are well adapted, but yields are reduced by periodic droughts. Fertilizer, lime, and controlled grazing are needed to maintain vigorous plants for maximum yields.

The potential productivity for pine trees is moderate. Equipment use limitations and seedling mortality are moderate. Sand and longleaf pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. It has slight limitations for septic tank absorption filter fields; however, because of poor filtration, ground water contamination is a possible hazard where there are many septic tanks. Alternative systems can reduce this hazard. Seepage is a severe limitation for sewage lagoons and area and trench landfills. The sandy texture is also a severe limitation for trench sanitary landfills. If this soil is used for sewage lagoons and landfills, the sand material needs to be sealed.

This soil has severe limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Eglin soil is in capability subclass IVs and in woodland suitability group 5S.

50—**Mandarin sand.** This soil is somewhat poorly drained and nearly level. It is in slightly elevated areas on flatwoods. Individual areas of this soil range from 3 to 50 acres. Slopes are smooth to concave.

Typically, the surface layer is gray sand about 8 inches thick. The subsurface layer is light gray sand to a depth of about 21 inches. The subsoil extends to a depth of 60 inches. It is black sand to a depth of 23 inches, very dark gray fine sand to a depth of 25 inches, dark reddish brown sand to a depth of 38 inches, and yellowish brown sand below that. The substratum is white sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Chipley, Foxworth, Hurricane, Leon, Resota, and Rutlege soils. Also included are small areas of soils similar to Mandarin soil except they have a dark color subsoil that is lighter in color than is typical for the Mandarin series. Small areas of similar soils that have a dark color subsoil at a depth of more than 30 inches are also included. The included soils make up less than 20 percent of the map unit.

This Mandarin soil has a high water table at a depth of 20 to 40 inches for 4 to 6 months during most years and below a depth of 40 inches for 6 to 8 months. The high water table is at a depth of 10 to 20 inches for up to 2 weeks after periods of heavy rainfall in some years. The available water capacity is very low or low in the surface and subsurface layers and moderate or low in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and rapid in the lower part. The organic matter content is very low to moderate.

The natural vegetation is mostly longleaf pine, loblolly pine, slash pine, and scrub oaks. The understory is sawpalmetto, running oak, and fetterbush. The most common native grass is pineland threeawn (wiregrass). Other grasses are creeping bluestem and panicum.

This Mandarin soil is not suited to cultivated crops.

This soil is only moderately suited to use as pasture. Coastal bermudagrass and bahiagrass are fairly suitable if this soil is fertilized. Clovers are not adapted.

The potential productivity for pine trees is moderate. Equipment use limitations and plant competition are moderate. Seedling mortality is severe. Slash and loblolly pines are the best trees to plant.

This soil has moderate limitations for building sites and local roads and streets and severe limitations for septic tank absorption fields because of the high water table. Alternative systems or fill can reduce this limitation for absorption fields. This soil has severe limitations for sewage lagoons and sanitary landfills because of the high water table and seepage.

This soil has severe limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Mandarin soil is in capability subclass VIs and in woodland suitability group 10S.

51—Bigbee loamy sand, 0 to 5 percent slopes, occasionally flooded. This soil is excessively drained and nearly level to gently sloping. It is on flood plain terraces along streams. Individual areas of this soil range from 3 to 30 acres. Slopes are smooth to concave.

Typically, the surface layer is loamy sand 8 inches thick. It is grayish brown to a depth of 2 inches and brown below that. The underlying material is pale brown loamy sand to a depth of 23 inches and very pale brown, light gray, and white sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Blanton, Garcon, Mandarin, and Yemassee soils and soils similar to Bigbee soil except they are moderately well drained and somewhat poorly drained. Areas of soils that have lamellae and areas of soils that are near streams and have slopes of more than 5 percent are also included. The included soils make up about 25 percent of the map unit.

This Bigbee soil has a high water table between depths of 20 and 40 inches for about 2 weeks each year and at a depth of 40 to 70 inches for 1 to 2 months. This soil has a 10 to 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The available water capacity is low, and permeability is rapid throughout. The organic matter content is low to moderately low. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation is mostly longleaf pine, loblolly pine, slash pine, southern red oak, laurel oak, live oak, and water oak, yaupon, American holly, and few sawpalmetto. The most common native grass is pineland threeawn (wiregrass).

This Bigbee soil has severe limitations for cultivated crops. Droughtiness, flooding, and rapid leaching of plant nutrients limit the choice of plants and reduce the potential yields of adapted crops. Row crops need to be planted on the contour in alternating strips with close-growing, soil-improving crops that remain on the land at least two-thirds of the time. The cover crops and crop residue left on the soil protect the soil from erosion. Regular applications of lime and fertilizer are needed because of rapid leaching. Measures need to be taken for protection from flooding. During periods of droughtiness, irrigation of high value crops, such as watermelons, is usually feasible where irrigation water is readily available.

This soil is moderately suited to use as improved pasture. Deep-rooting plants, such as coastal bermudagrass and improved bahiagrass, are well adapted. They grow well and produce good ground cover if the soil is limed and fertilized. Controlled grazing is needed to maintain vigorous plants for maximum yields. Yields are occasionally greatly reduced by extended severe droughts and by flooding.

The potential productivity of pine trees is moderately high. Equipment use limitations and seedling mortality are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has severe limitations for septic tank absorption fields, building sites, and local roads and streets because of flooding. Houses and buildings should be elevated. This soil has severe limitations for sewage lagoons and area sanitary landfills because of flooding and the high water table during wet periods.

This soil has severe limitations for camp areas and playgrounds because of flooding and the sandy surface. The limitations for picnic areas and paths and trails is moderate because of the sandy surface causing poor trafficability. Suitable topsoil can reduce this limitation.

This Bigbee soil is in capability subclass IIIs and in woodland suitability group 10S.

52—Yemassee fine sandy loam, occasionally flooded. This soil is somewhat poorly drained and gently sloping. It is on terraces along flood plains of streams and rivers. Individual areas of this soil range from 3 to 50 acres. Slopes are 0 to 2 percent and are concave or convex.

Typically, the surface layer is fine sandy loam about 6 inches thick. It is very dark gray to a depth of 3 inches and dark grayish brown below that. The subsoil is fine sandy loam to a depth of 11 inches and sandy clay loam to a depth of 47 inches. It is yellowish brown to a depth of 16 inches, light brownish gray to a depth of 28 inches, and gray below that. The substratum is light gray fine sandy loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Bigbee, Florala, Garcon, Kinston, Leefield, Pantego, and Stilson soils. Also included are soils similar to Yemassee soil except they have a subsoil to a depth of 60 inches or more or they are moderately well drained. The included soils make up less than 25 percent of the map unit.

This Yemassee soil has a high water table 12 to 18 inches below the surface for about 2 to 4 months during winter and early in spring. It has a 10 to 50 percent chance of flooding in any one year for periods ranging from 2 to 7 days. The available water capacity is medium or high, and permeability is moderately rapid in the surface layer and moderate in the subsoil. The organic matter content is low to moderate. The internal drainage rate under natural conditions is low, but response to artificial drainage is moderately rapid.

The natural vegetation is mostly slash pine, loblolly pine, longleaf pine, silverleaf maple, American holly, water oak, willow oak, huckleberry, gallberry, southern magnolia, sweetbay, yaupon, briers, and ferns. The most common native grass is pineland threeawn (wiregrass). Other grasses are bluestem and panicums.

This Yemassee soil has moderate limitations for cultivated crops because of wetness and the hazard of flooding. It is well suited to some cultivated crops, but the variety is limited by the seasonal high water table. Corn and soybeans are adapted only when the soil is properly drained. Tile drains or open ditches are needed. Row crops need to be planted in rotation with cover crops that remain on the land at least half the time. Soil-improving cover crops and crop residue left on the soil protect the soil from erosion. For best yields, this soil requires good seedbed preparation, fertilizer, and lime. Conservation tillage helps to control erosion and conserve moisture.

This soil is well suited to pasture and hay. Coastal bermudagrass, tall fescue, clovers, and bahiagrass grow well with good management. For best yields, this soil requires fertilizer and lime, and controlled grazing is needed to maintain plant vigor.

The potential productivity for pine trees is high. Equipment use limitations and plant competition are moderate. Slash and loblolly pines are the best trees to plant.

This soil has severe limitations for use as building sites, local roads and streets, and septic tank absorption fields because of flooding and the high water table. Homesites and buildings can be elevated or fill can be added to reduce this limitation. This soil has severe limitations for sewage lagoons and sanitary landfills because of seepage, the hazard of flooding, and the high water table during wet periods.

This soil has moderate limitations for most recreational development because of the hazard of flooding and the high water table. Wetness is a moderate limitation for camp areas and playgrounds, and the hazard of flooding and the high water table are severe limitations.

This Yemassee soil is in capability subclass IIw and in woodland suitability group 11W.

53—Arents, 2 to 8 percent slopes. This soil is excessively drained and gently sloping to sloping. It is sandy material excavated from the Intercoastal Waterway and deposited along the banks. This material is a mixture of fine sand, sand, fragments of subsoil material from the Hurricane and Leon soils, and sand from the Foxworth and Rutlege soils. Individual areas generally are rectangular to polygonal and range from 5 to 200 acres. Most areas are long and are up to 0.25 mile wide.

In most places, this soil is variable with discontinuous lenses, pockets, and streaks of light gray, grayish brown, very pale brown, yellowish brown, yellow, black, dark reddish brown, strong brown, yellowish red, and red fine sand or sand. It contains few to common black and dark reddish brown sandy fragments from the subsoil of the soils in the borrow area. Thickness of the material ranges from 2 to 20 feet. This soil does not have an orderly sequence of horizons.

Included with this soil in mapping are areas where the overburden is less than 2 feet thick. Also included are small areas of soils that contain fragments or they are organic material or muck. The included soils make up less than 15 percent of the map unit.

This Arents soil has very low available water capacity. Permeability is very rapid. The organic matter content is low or very low. This soil does not have a high water table within a depth of 6 feet.

This soil supports small amounts of rosemary and reindeer lichens.

This soil is not suited to use as cropland, pasture, or woodland. Sand pine could be planted, but results are unpredictable at this time.

This soil has slight limitations for septic tank absorption fields; however because of poor filtration, a hazard of ground water contamination is possible where there are many septic tanks. Alternate systems can reduce this hazard. This soil has slight limitations for building sites and local roads and streets. It has moderate limitations for small commercial buildings because of slope. Seepage and slope are severe limitations for sewage lagoons. This soil has severe limitations for trench sanitary landfills because of seepage and the sandy texture, and seepage is also a severe limitation for area sanitary landfills. If this soil is used for sewage lagoons and landfills, the sandy sidewalls need to be sealed.

This soil has severe limitations for camp areas, picnic areas, and paths and trails because of the sandy surface; however, suitable topsoil or some form of surfacing can reduce or overcome these limitations. It has severe limitations for playgrounds because of slope and poor trafficability caused by the sandy surface.

This Arents soil is in capability subclass VIIs. This soil has not been assigned to a woodland suitability group.

54—Newhan-Corolla sands, rolling. This map unit consists of Newhan and Corolla soils in undulating dune-like areas adjacent to the Gulf of Mexico. These soils are gently sloping to steep. Newhan soil is excessively drained, and Corolla soil is moderately well drained or somewhat poorly drained. Areas of these soils are too intricately mixed and too small to be mapped separately at the selected scale. Areas of this map unit range from 10 to 200 acres. Individual areas of soils within the map unit range from less than 1 acre to 5 acres.

Newhan soil makes up about 35 to 55 percent of the map unit. Typically, the surface layer is light gray sand about 5 inches thick. The underlying material to a depth of 80 inches or more is white sand that contains horizontal bands of black heavy minerals.

Permeability of this soil is very rapid throughout. The available water capacity and organic matter content are very low. This soil does not have a high water table within a depth of 6 feet.

Corolla soil makes up about 25 to 40 percent of the map unit. Typically, the surface layer is light gray sand 8 inches thick. The upper part of the underlying material is sand to a depth of 57 inches. It is white to a depth of 33 inches, light gray to a depth of 42 inches, and gray below that. A buried dark gray sand surface layer is between depths of 57 and 67 inches. The lower part of the underlying material is gray sand to a depth of at least 80 inches. Horizontal bands of heavy black minerals and lenses of gray sand are throughout the profile. They are remnants of a former surface layer that was moved and deposited by drifting and blowing sand.

This Corolla soil has a high water table 18 to 36 inches below the surface for 2 to 6 months during most years. The high water table is 36 to 60 inches below the surface the rest of the year. Permeability is very rapid throughout. The available water capability and organic matter content are very low.

Included in this map unit are soils similar to Corolla and Newhan soils except they have a seasonal high water table at a depth of 36 to 72 inches for 2 to 6 months. Also included are Kureb, Leon, Mandarin, Resota, and Rutlege soils and soils that have a Bh horizon below a depth of 30 inches. Numerous wet spots that occur as small ponds or as long narrow sloughs are shown by wet spot symbols. Also included are soils that have numerous short, steep slopes of up to 70 percent. The included soils make up 10 to 35 percent of the map unit.

Natural vegetation is sparse. It is chiefly stunted sand pine, seaoats (fig. 13), switchgrass, rosemary, reindeer lichen, scrub live oak, and palmetto. The vegetation is stunted because of salt spray.

The soils in this map unit are not suited to use as cropland, pasture, nor woodland.

These soils have severe limitations for building sites and local roads and streets because of flooding, the high water table, and slope. Where they are subject to flooding, the houses can be elevated. Leveling can reduce the slope limitation. These soils have severe limitations for septic tank absorption fields because of the high water table, poor filtration, and slope. Alternative systems can overcome these limitations. Seepage, the hazard of flooding, slope, and the high water table are severe limitations for sewage lagoons. These soils have severe limitations for sanitary landfills because of seepage, the high water table, the sandy texture, and slope.

These soils have severe limitations for recreational development because they are too sandy and have steep slopes. Flooding is also a hazard for camp areas.

These Newhan and Corolla soils are in capability subclass VIIIs. They have not been assigned to a woodland suitability group.

55—Beaches. Beaches are narrow strips of tide washed sand along the Gulf of Mexico. The sand is white and has few to common heavy minerals. Beaches range from 200 to 500 feet in width. As much as half of the beach can be covered by saltwater daily by high tide and wave action, and all of it can be covered during

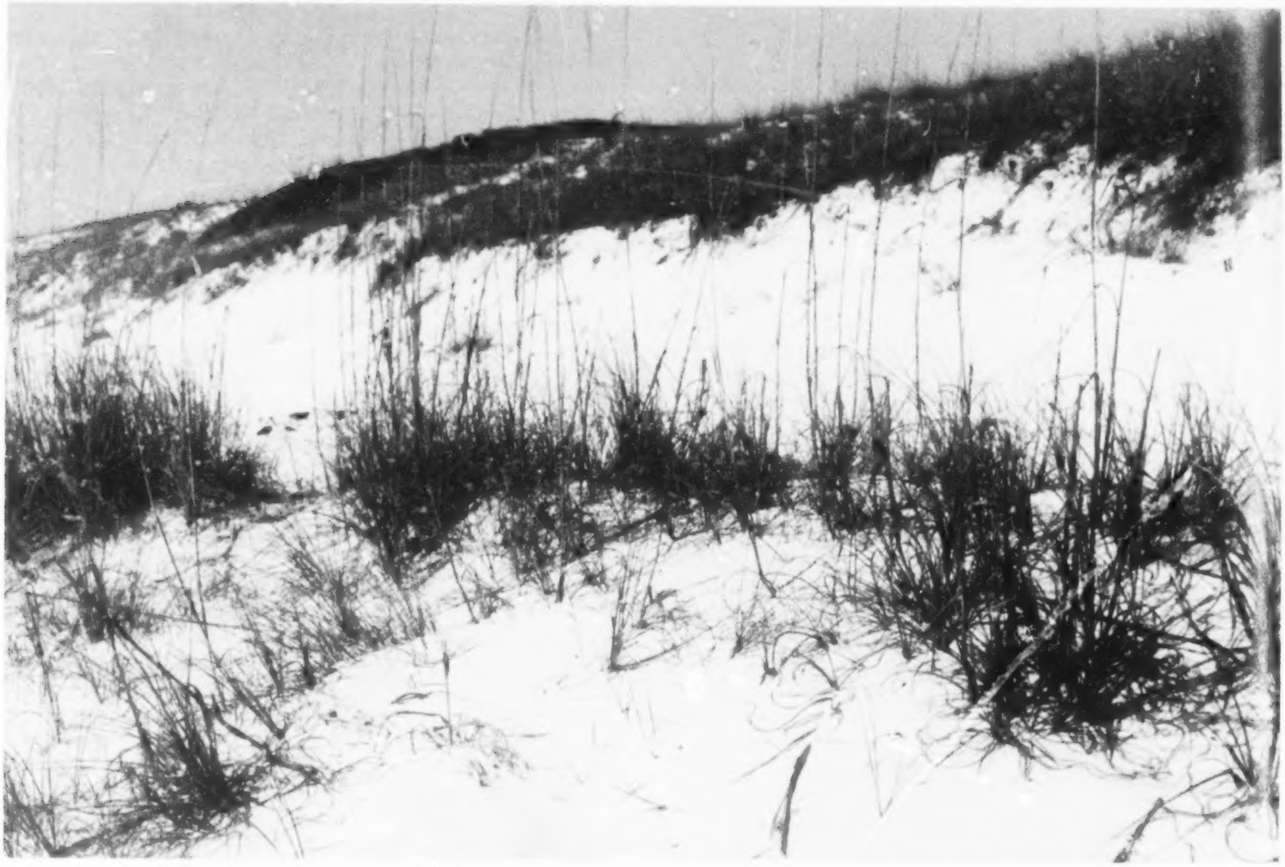

Figure 13.—Seaoats protect the dunes from erosion in this area of Newhan-Corolla sands, rolling.

storms. The shape and slope of the beaches commonly change with every storm. Most areas have a uniform, gentle slope, but a short, stronger slope is at the water's edge. Beaches generally have no vegetation, but inland edges are sometimes sparsely covered with sea-oats.

The high water table ranges from the surface to a depth of 4 feet or more. The depth varies depending on distance from the water, height of the beach, effect of storms, and time of year. Permeability is very rapid.

Included in mapping are sand dunes on the north side. The dunes are generally Newhan and Corolla soils. They are not subject to wave action except during storms, but they commonly receive salt spray.

Beaches are used for recreational activities including sunbathing, strolling, pleasure driving, picnics, swimming, fishing, surfing, scuba diving, and boating. In most places, the sand is firm enough to support vehicles with wide tires.

Beaches are not suited to use for cultivated crops, pasture, or woodland. They are mainly suited to recreational use and to use as habitat for wildlife.

Beaches are in capability subclass VIIIw. This map unit has not been assigned to a woodland suitability group.

56—**Kureb sand, hilly.** This soil is excessively drained and strongly sloping to steep. It is on dune-like ridges. Individual areas of this soil range from 20 to 80 acres. Slopes are concave and convex.

Typically, the surface layer is gray sand 2 inches thick. The subsurface is sand to a depth of 45 inches. It is light gray to a depth of 12 inches and white below that. The subsoil is brownish yellow sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Lakeland, Resota, and Newhan soils and a few areas of soils that have slopes of more than 30 percent that are too short and narrow to delineate. The longer and steeper slopes are shown with a short, steep slope symbol. The included soils make up less than 20 percent of the map unit.

This Kureb soil has a loose, well aerated root zone to a depth of more than 72 inches. The available water capacity is very low and permeability is rapid throughout. The organic matter content is very low to moderately low. Fertilizers are rapidly leached from the soil. Rainfall is rapidly absorbed into the soil, but runoff in unprotected areas is rapid during heavy rainfall. This soil does not have a high water table within a depth of 6 feet.

Natural vegetation is mostly turkey oak, bluejack oak, a few live oak, sand pine, and in a few areas, longleaf pine. The understory is sawpalmetto. The most common native grass is pineland threeawn (wiregrass). The vegetation nearest the Gulf of Mexico is stunted as a result of salt spray.

The soil is too steep to use for field crops or pastures. The potential productivity for pine trees is low. Equipment use limitations and seedling mortality are severe. Sand pine is the best tree to plant.

This Kureb soil has severe limitations for building sites and local roads and streets because of slope. Cutting and filling can reduce this limitation. Slope is also a severe limitation for septic tank absorption fields. Alternative systems or leveling can reduce this limitation. Slope and seepage are severe limitations for sewage lagoons and sanitary landfills. Shaping and sealing the bottoms and sides can reduce these limitations.

This soil has severe limitations for recreational development because of the sandy surface and the slope. Shaping and a suitable topsoil or some form of surfacing can reduce or overcome these limitations.

This Kureb soil is in capability subclass VIIs and in woodland suitability group 3S.

57—**Hurricane sand, 0 to 5 percent slopes.** This soil is somewhat poorly drained and nearly level. It is in slightly elevated areas on flatwoods. Individual areas of this soil generally range from 10 to more than 100 acres; a few are as small as 3 acres. Slopes are smooth to slightly convex.

Typically, the surface layer is very dark gray sand 5 inches thick. The subsurface layer is sand to a depth of 63 inches. It is brown to a depth of 14 inches, yellowish brown to a depth of 22 inches, brownish yellow to a depth of 47 inches, and white below that. The subsoil is black sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Chipley, Foxworth, Leon, Mandarin, and Rutlege soils. Also included are poorly drained soils in which the surface layer is underlain by a shallow, weakly developed, dark color subsoil. Also included are soils similar to this Hurricane soil except they are poorly drained and areas of soils in which the content of clay increases just above the deep, dark color subsoil. The included soils make up less than 15 percent of the map unit.

This Hurricane soil has a high water table within 20 to 40 inches of the soil surface for 3 to 6 months in most years and below a depth of 40 inches for the rest of the year. The available water capacity is low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. The organic matter content is very low to moderately low.

Natural vegetation consists mostly of slash pine, loblolly pine, longleaf pine, bluejack oak, turkey oak, and post oak. The understory is yaupon, sawpalmetto, gallberry, broomsedge bluestem, and pineland threeawn (wiregrass).

This Hurricane soil has severe limitations for cultivated crops because of periodic wetness. The number of adapted crops is very limited unless intensive water control measures are used. This soil is well suited to many kinds of crops if the water control system removes excess water in wet seasons and provides subsurface irrigation in dry seasons. Other management measures needed include crop rotations that have a close-growing, soil-improving crop that remains on the land at least two-thirds of the time, and crop residue left on the soil to protect the soil from erosion. Conservation tillage also helps to control erosion and conserve moisture. Fertilizer and lime should be added according to the needs of the crop.

This Hurricane soil is moderately well suited to pasture and hay. Coastal bermudagrass and bahiagrass are well adapted. They require simple drainage to remove excess surface water in times of high rainfall, and regular use of fertilizers. Some areas of this soil respond well to lime. Grazing should be carefully controlled to maintain healthy plants for highest yields.

The potential productivity of pine trees is high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has moderate limitations for building sites and local roads and streets and severe limitations for septic tank absorption fields because of the high water table. Alternative systems or fill can reduce this limitation for absorption fields. This soil has severe limitations for sewage lagoons and sanitary landfills because of seepage and the high water table.

This soil has severe limitations for recreational development because the sandy texture causes poor trafficability. Suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Hurricane soil is in capability subclass IIIw and in woodland suitability group 11W.

58—Duckston muck, frequently flooded. This soil is very poorly drained and frequently flooded by heavy rains or high storm tides. It is on broad, level tidal marshes that border the Choctawhatchee Bay. Individual areas of this soil range from 10 to 400 acres. Slope is smooth and less than 1 percent.

Typically, 4 inches of black muck is on the surface. The surface layer is sand to a depth of 21 inches. It is dark grayish brown to a depth of 6 inches and dark gray below that. The substratum is sand in shades of gray to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Dirego, Leon, and Rutlege soils. Also included are soils that have more than 8 inches of muck on the surface. The included soils make up less than 20 percent of the map unit.

This Duckston soil has a high water table at a depth of 10 to 20 inches below the surface most of the year. It has more than a 50 percent chance of flooding for brief periods in any one year. The available water capacity is very high in the organic layer and very low in the surface layer and substratum. Permeability is rapid or very rapid. The organic matter content is very high in the organic layer and low in the surface layer and substratum.

The natural vegetation includes sand cordgrass, marshhay cordgrass, smooth cordgrass, and few scattered waxmyrtle.

This soil is not suited to use as cropland, pasture, or woodland because of flooding and occasional salinity.

This soil is not suited to urban or recreational development. Wetness and the hazard of flooding are severe limitations that are not practical to overcome.

This Duckston soil is in capability subclass VIIw. This soil has not been assigned to a woodland suitability group.

59—Malbis fine sandy loam, 0 to 2 percent slopes. This soil is moderately well drained and nearly level. It is on uplands. Individual areas of this soil range mostly from 15 to more than 100 acres; some areas are as small as 5 acres. Slopes are smooth to convex.

Typically, the surface layer is very dark grayish brown fine sandy loam 7 inches thick. The subsoil extends to a depth of at least 80 inches. It is brownish yellow sandy loam to a depth of 13 inches. Below that, the subsoil is sandy clay loam. It is brownish yellow to a depth of 40 inches, and it is yellow and contains plinthite to a depth of 45 inches. Below that, it is mottled in shades of gray, red, brown, and yellow.

Included with this soil in mapping are small areas of Dothan, Escambia, Fuquay, Leefield, Stilson, and Tifton soils. Also included are areas of Malbis soil that has slopes of 2 to 5 percent and has a loamy sand or loamy fine sand surface layer. A few small wet areas are shown by a wet spot symbol. Some areas of soils similar to Malbis soil except they have slightly less than 20 percent silt in the subsoil or that have less than 5 percent plinthite in the lower part of the subsoil are also included. The included soils make up less than 25 percent of the map unit.

This Malbis soil has a perched high water table at a depth of 30 to 50 inches during winter and early in spring. It is as shallow as 20 inches for short periods. The available water capacity is moderate in the surface layer and low to high in the subsoil. Permeability is moderate in the surface layer and moderate or moderately slow in the subsoil. The organic matter content is low. Runoff is slow in unprotected areas. Internal drainage is moderately slow under natural conditions, and response to artificial drainage is moderate.

The natural vegetation is mostly longleaf pine, slash pine, loblolly pine, gallberry, southern red oak, laurel oak, dogwood, and hickory. Pineland threeawn (wiregrass) is the most common native grass.

This Malbis soil has slight limitations for cultivated crops. The variety of well adapted crops is slightly limited by a restricted root zone and wetness. Corn and peanuts are well adapted. Crop rotations that provide cover crops on the land at least half the time are needed. Good seedbed preparation, fertilizer, and lime are needed for best yields.

This soil is well suited to use as pasture. Tall fescue, clovers, and coastal bermudagrass are well adapted and grow well if properly managed. This soil responds well to fertilizer and lime. Grazing should be controlled to maintain plant vigor.

The potential productivity for pine trees is high. Plant competition is moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for building sites and recreational development. It has moderate limitations for septic tank absorption fields because of moderate or moderately slow permeability. Alternative systems or fill can reduce this limitation. This soil has slight limitations for sewage lagoons. It has moderate limitations for area sanitary landfills and severe limitations for trench sanitary landfills because of the high water table. Low strength is a moderate limitation for local roads and streets. Drainage can reduce this limitation.

This Malbis soil is in capability class I and in woodland suitability group 11A.

60—Malbis fine sandy loam, 2 to 5 percent slopes. This soil is moderately well drained and gently sloping. It is on broad ridgetops on uplands. Individual areas of this soil range mostly from 20 to 200 acres; some areas are as small as 5 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is dark grayish brown fine sandy loam 6 inches thick. The subsoil extends to a depth of at least 80 inches. It is brownish yellow fine sandy loam to a depth of 12 inches thick. The rest of the subsoil is fine sandy loam except the sandy clay loam layer between depths of 38 and 48 inches. To a depth of 48 inches, the subsoil is brownish yellow, and to a depth of 60 inches, it is yellowish brown and has plinthite. Below that, it is strong brown.

Included with this soil in mapping are small areas of Dothan, Escambia, Fuquay, Leefield, Stilson, and Tifton soils. Also included are areas of Malbis soil that has slopes of 0 to 2 percent and 5 to 8 percent and areas that have a loamy sand or loamy fine sand surface layer. A few wet areas are shown by a wet spot symbol. Some areas have soils similar to this Malbis soil except they have slightly less than 20 percent silt in the upper part of the subsoil or have less than 5 percent plinthite in the lower part. The included soils make up less than 25 percent of the map unit.

This Malbis soil has a perched high water table at a depth of 30 to 50 inches during winter and early in spring. It is as shallow as 20 inches for short periods. The available water capacity is moderate or high. Permeability is moderate in the surface layer and moderate or moderately slow in the subsoil. The organic matter content is low. Runoff is slow in unprotected areas. Internal drainage is moderately slow, and response to artificial drainage is moderate.

The natural vegetation is mostly longleaf pine, slash pine, loblolly pine, gallberry, turkey oak, laurel oak, dogwood, and hickory. Pineland threeawn (wiregrass) is the most common native grass.

This Malbis soil has moderate limitations for cultivated crops because of the hazard of erosion. The variety of adapted crops is somewhat limited by occasional wetness. Corn and peanuts are adapted if properly managed. Erosion control measures, such as terraces that have stabilized outlets; contour cultivation of row crops in alternate strips with cover crops that remain on the land at least half the time; and crop residue and soil-improving cover crops left on the ground to protect the soil from erosion. Maximum yields require good seedbed preparation and additions of fertilizer and lime to the soil.

This soil is well suited to pasture and hay. Improved pasture plants, such as clovers, tall fescue, coastal bermudagrass, and bahiagrass, are well adapted and produce well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants and a good ground cover.

The potential productivity for pine trees is high. Plant competition is moderate. Slash and loblolly pines are the best trees to plant.

This soil has slight limitations for building sites. Low strength is a moderate limitation for local roads and streets. Drainage can reduce this limitation. This soil has moderate limitations for septic tank absorption fields because of the moderate or moderately slow permeability. Alternative systems or fill can reduce this limitation. Slope is a moderate limitation for sewage lagoons. This soil has moderate limitations for area sanitary landfills and severe limitations for trench sanitary landfills because of the high water table.

This soil has moderate limitations for recreational development mainly because of the high water table. Slope is a limitation for playgrounds.

This Malbis soil is in capability subclass IIe and in woodland suitability group 11A.

61—Malbis fine sandy loam, 5 to 8 percent slopes. This soil is moderately well drained and sloping. It is on uplands. Individual areas of this soil range mostly from 10 to 50 acres; some areas are as small as 3 acres.

Typically, the surface layer is dark grayish brown fine sandy loam 7 inches thick. The subsoil extends to a depth of at least 80 inches. It is yellowish brown fine sandy loam to a depth of 12 inches and yellowish brown sandy loam to a depth of 17 inches. Below that, the subsoil is yellowish brown sandy clay loam that has plinthite.

Included with this soil in mapping are small areas of Dothan, Escambia, Fuquay, and Tifton soils and a few areas of Malbis soil that has slopes of 2 to 5 and 8 to 12 percent. Also included are areas of soils similar to this

Malbis soil except they have a loamy fine sand or loamy sand surface layer, have slightly less than 20 percent silt in the upper part of the subsoil, or they have less than 5 percent plinthite in the lower part of the subsoil. Some areas are eroded. A few poorly drained soils are in and along small bottom lands and drainageways. The included soils make up less than 25 percent of the map unit.

This Malbis soil has a perched high water table at a depth of 30 to 50 inches during winter and early in spring. It is as shallow as 20 inches for short periods. The available water capacity is moderate in the surface layer and moderate or high in the subsoil. Permeability is moderate in the surface layer and moderate or moderately slow in the subsoil. The organic matter content is low. Runoff is rapid.

The natural vegetation is mostly longleaf pine, slash pine, loblolly pine, turkey oak, laurel oak, flowering dogwood, gallberry, and hickory. Pineland threeawn (wiregrass) is the most common native grass.

This Malbis soil has severe limitations for cultivated crops because of the hazard of erosion. It has only fair suitability for most cultivated crops. Corn, soybeans, and peanuts are only fairly well adapted. Intensive erosion control measures are needed. These measures include contour cultivation of row crops in alternate strips with close-growing crops that remain on the land at least two-thirds of the time and crop residue left on the soil. Maximum yields require good seedbed preparation and additions of fertilizer and lime to the soil.

This soil is moderately well suited to pasture and hay. Cool-season plants, such as tall fescue and clovers, are poorly adapted. Coastal bermudagrass and improved bahiagrass, grow only moderately well. Fertilizer and lime are needed. Controlled grazing is needed to maintain plant vigor for maximum yields and good ground cover.

The potential productivity for pine trees is high. Plant competition is moderate. Slash and loblolly pines are the best trees to plant.

This soil has slight limitations for building sites. It has moderate limitations for local roads and streets because of its low strength when wet. Drainage can reduce this limitation. Limitations for small commercial buildings are moderate because of slope. Cutting and filling can reduce this limitation. Permeability is a moderate limitation for septic tank absorption fields. Alternative systems or fill can reduce this limitation. This soil has moderate limitations for area sanitary landfills and severe limitations for trench sanitary landfills because of the high water table.

This soil has slight limitations for most recreational development. Slope is a severe limitation for playgrounds.

This Malbis soil is in a capability subclass IIIe and in woodland suitability group 11A.

62—Resota sand, 0 to 5 percent slopes. This soil is moderately well drained and nearly level to gently sloping. It is on moderately elevated ridges on flatwoods. Individual areas of this soil range mostly from 10 to more than 50 acres; some areas are as small as 5 acres. Slopes are mostly smooth to convex but are concave in places.

Typically, the surface layer is gray sand 3 inches thick. The subsurface is light gray sand 10 inches thick. The subsoil is sand to a depth of 53 inches. To a depth of 19 inches, it is yellowish brown with light gray tongues, and to a depth of 31 inches, it is yellowish brown. It is brownish yellow to a depth of 40 inches and very pale brown below that. The substratum is white sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Foxworth, Kureb, and Mandarin soils. Also included are soils similar to Resota soil except they have slopes of more than 5 percent. The included soils make up less than 15 percent of the map unit.

This Resota soil has a high water table at a depth of 40 to 60 inches for up to 4 months in most years and at a depth of 60 to 80 inches in dry seasons. The available water capacity is very low, and permeability is very rapid throughout. The organic matter content is low or very low. Rainfall is rapidly absorbed, and there is little runoff.

The natural vegetation is mostly sand pine, longleaf pine, slash pine, and live oak. The understory is sawpalmetto, woody goldenrod, sand heath, and panicum. Pineland threeawn (wiregrass) is the most common native grass.

This Resota soil has very severe limitations for cultivated crops because of poor soil quality. Droughtiness and rapid leaching of plant nutrients reduce the variety and potential yields of adapted crops. Row crops need to be planted on the contour in alternating strips with close-growing crops that remain on the soil at least three-fourths of the time. Cover crops and crop residue left on the soil protect the soil from erosion. The variety of crops that produces good yields without irritation is restricted. Irrigation is usually feasible where irrigation water is readily available.

This soil is moderately suited to pasture and hay. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted but yields are reduced by periodic droughts. Regular applications of fertilizer and lime are needed. Controlled grazing helps to maintain plant vigor for best yields.

The potential productivity for pine trees is moderate. Equipment use limitations and plant competition are moderate. Sand pine is the best tree to plant.

This soil has slight limitations for building sites and local roads and streets. It has moderate limitations for septic tank absorption fields because of the seasonal high water table. Alternative systems or fill can overcome this limitation. Because of poor filtration, a hazard of ground water contamination is possible where there are many septic tanks. Seepage is a severe limitation for sewage lagoons and area sanitary landfills. This soil has severe limitations for trench sanitary landfills because of seepage, the high water table, and the sandy texture. If this soil is used for sewage lagoons and landfills, the sandy sidewalls and bottoms need to be sealed.

This soil has severe limitations for recreational development because it is too sandy. Suitable topsoil or some form of surfacing can reduce or overcome this limitation.

This Resota soil is in capability subclass VIs and in woodland suitability group 4S.

63—Pickney sand, depressional. This soil is very poorly drained and nearly level. It is in drainageways and depressional areas of the flatwoods. Individual areas of this soil range from 5 to 100 acres. Slopes are smooth to convex and are less than 2 percent.

Typically, the surface layer is black sand 37 inches thick. The underlying material is dark gray or very dark gray sand to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Hurricane, Leon, Pamlico, and Rutlege soils. The Rutlege soils occur more often than the other included soils. Also included are areas of soils that have a deep, dark color subsoil. The included soils make up less than 20 percent of the map unit.

This Pickney soil is ponded for more than 4 months annually. During the drier seasons, the high water table can recede to a depth of 20 inches. The available water capacity is very low to moderate. Permeability is rapid throughout, however, internal drainage is low when impeded by the high water table. The organic matter content is high. Response to artificial drainage is rapid.

The natural vegetation is mostly hardwoods, swamp cyrilla, scattered baldcypress, yaupon, pond pines, slash pine, and loblolly pine. The understory is greenbriers, pineland threeawn (wiregrass), gallberry, and sedges.

This Pickney soil is not suited to cultivated crops because of excessive wetness.

If water control measures are used to remove excess water, this soil is moderately suited to use as improved pasture. Because of the difficulty of installing these measures and the lack of drainage outlets in many areas, it is seldom used as pasture.

Most areas of this soil are not planted to pine trees because of ponding. Equipment use limitations, seedling mortality, and plant competition are severe. The windthrow hazard is moderate. Loblolly and slash pines can be planted only after drainage.

This soil is not suited to urban or recreational development because of ponding. This limitation is generally not practical to overcome.

This Pickney soil is in capability subclass VIw and in woodland suitability group 7W.

64—Pamlico muck. This soil is poorly drained and nearly level. It is in depressional areas of the flatwoods. Individual areas of this soil range from 3 to 100 acres. Slopes are smooth to convex and are less than 2 percent.

Typically, the surface layer is black muck 25 inches thick. The underlying material is sand to a depth of at least 60 inches. It is black to a depth of 28 inches, very dark gray to a depth of 35 inches, dark gray to a depth of 42 inches, and gray below that.

Included with this soil in mapping are small areas of Dorovan, Leon, Pickney, and Rutlege soils. The included soils make up less than 20 percent of the map unit.

This Pamlico soil has a water table up to 2 feet above the surface for 6 months in most years. Permeability is moderate or moderately rapid, and the available water capacity is very high. The organic matter content is very high. The internal drainage is slow because of the high water table.

The natural vegetation is mostly swamp cyrilla, greenbrier, baldcypress (fig. 14), pond pine, and sweetbay.

This soil is not suited to use as cropland or pasture. Water covers the surface most of the year and drainage outlets are few.

Pine trees are normally not planted on this soil because of ponding. Equipment use limitations, seedling mortality, windthrow hazard, and plant competition are severe.

This soil is not suited to urban or recreational development. Ponding, wetness, and poor soil quality are severe limitations that are not practical to overcome.

This Pamlico soil is in capability subclass VIIw and in woodland suitability group 7W.

65—Garcon loamy fine sand, occasionally flooded. This soil is somewhat poorly drained and nearly level. It is on terraces along flood plains of streams and rivers. Individual areas of this soil range from 5 to 100 acres. Slopes are 0 to 2 percent and are smooth to concave.

Typically, the surface layer is loamy fine sand about 6 inches thick. It is very dark gray to a depth of 3 inches and dark grayish brown below that. The subsurface layer is loamy fine sand to a depth of 25 inches. It is yellowish brown to a depth of 11 inches and brownish yellow below that. The subsoil extends to a depth of 49 inches. It is brownish yellow fine sandy loam to a depth of 28 inches, light yellowish brown fine sandy loam to a depth of 46 inches, and light gray loamy fine sand below that. The substratum to a depth of at least 80 inches is white fine sand that has mottles in shades of yellow or brown.

Included with this soil in mapping are small areas of Bigbee, Blanton, Kinston, Pantego, and Yemassee soils. Also included are soils similar to Garcon soil except they have a subsoil that extends to a depth of 60 inches or more, they are moderately well drained, or they are near streams and have slopes of more than 5 percent. The

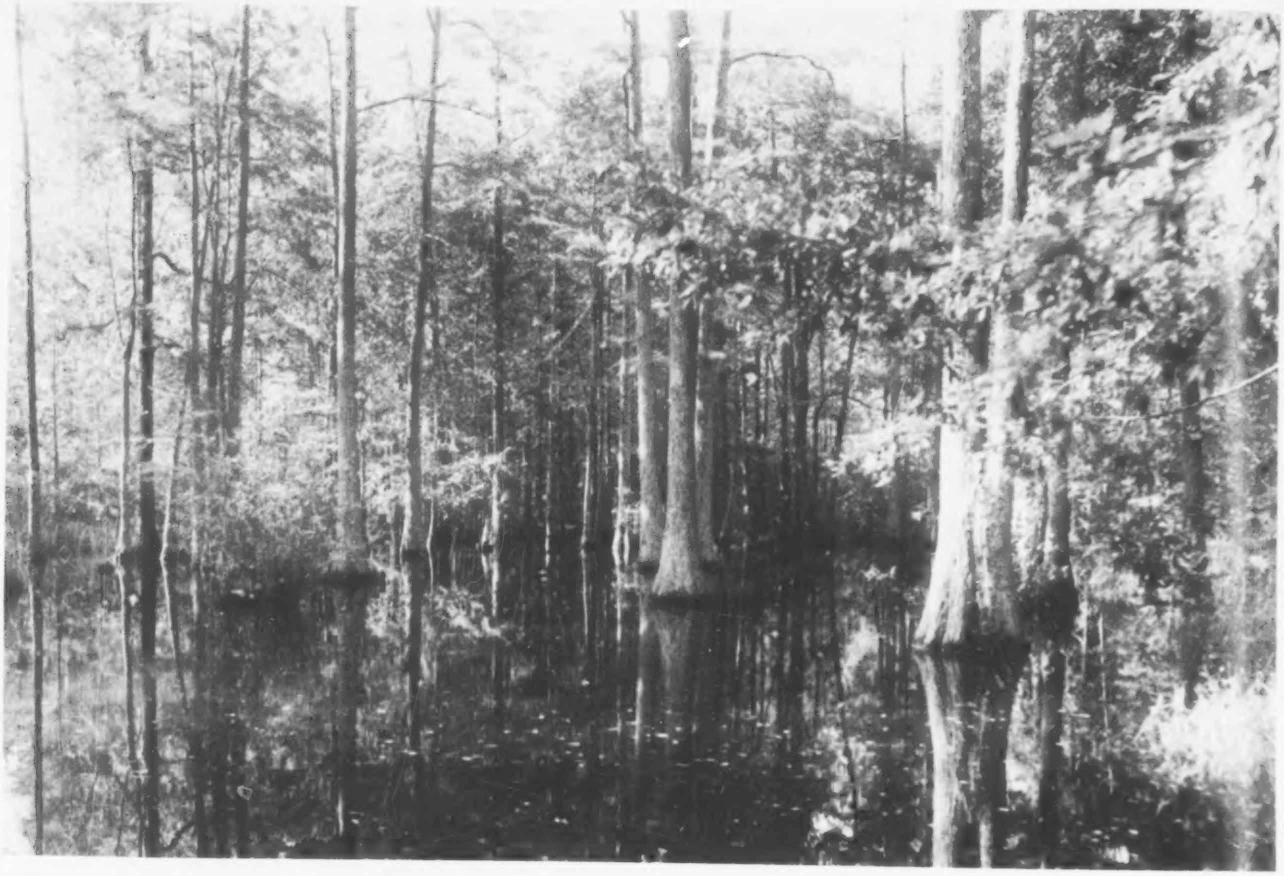

Figure 14.—Many cypress swamps are on Pamlico muck.

included soils make up less than 30 percent of the map unit.

This Garcon soil has a high water table 20 to 40 inches below the surface for up to 4 months, above a depth of 20 inches for brief periods, and below a depth of 40 inches for more than 6 months. This soil is flooded less often than once every two years for periods ranging from 2 to 7 days. The available water capacity is moderate in the surface layer, low in the subsurface layer, and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The organic matter content is low to moderate. The internal drainage rate under natural conditions is moderate, and response to artificial drainage is good.

The natural vegetation is mostly slash pine, loblolly pine, longleaf pine, red maple, American holly, huckleberry, gallberry, southern magnolia, yaupon, briers, and ferns. The most common native grass is pineland threeawn (wiregrass). Other grasses are bluestem and panicums.

This Garcon soil has moderate limitations for cultivated crops because of wetness and flooding. It is well suited to some cultivated crops, but the variety is limited by the seasonal high water table. Corn and soybeans are adapted only when the soil is properly drained. Tile drains or open ditches are needed to protect crops from wetness. Row crops need to be rotated with cover crops that remain on the land at least half the time. Soil-improving cover crops and crop residue left on the soil help control erosion and conserve moisture.

This soil is well suited to pasture and hay. Coastal bermudagrass and bahiagrass grow well with good management. White clovers and other legumes are moderately adapted. Best yields require applications of fertilizer and lime to the soil and carefully controlled grazing to maintain plant vigor.

The potential productivity for pine trees is moderately high. Seedling mortality and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has severe limitations for use as building sites and local roads and streets because of flooding. Raising the elevation of buildings can reduce this hazard. The high water table is a severe limitation for sanitary facilities, and flooding is a hazard. Seepage is a severe limitation for sewage lagoons and sanitary landfills.

This soil has severe limitations for recreational development because of the sandy surface. Suitable topsoil or some form of surfacing can reduce or overcome this limitation. Flooding is a severe hazard for camp areas.

This Garcon soil is in capability subclass IIw and in woodland suitability group 10W.

66—Kenansville loamy fine sand, 0 to 5 percent slopes. This soil is well drained and nearly level to gently sloping. It is on stream terraces. Individual areas of this soil range mostly from 10 to more than 100 acres; some areas are as small as 3 acres. Slopes are smooth to convex.

Typically, the surface layer is grayish brown loamy fine sand 10 inches thick. The subsurface layer is light yellowish brown loamy fine sand to a depth of about 31 inches. The subsoil is brownish yellow fine sandy loam to a depth of 57 inches. The substratum is light yellowish brown fine sand to to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Bigbee, Bonneau, Garcon, Norfolk, Troup, and Yemassee soils. Also included are soils similar to this Kenansville soil except they have a subsoil to a depth of 60 to 70 inches or have surface and subsurface layers more than 40 inches thick. The included soils make up less than 20 percent of the map unit.

In Kenansville soil, the available water capacity is very low in the surface and subsurface layers and moderate in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. The organic matter content is low or moderately low. Rainfall is rapidly absorbed, and there is little runoff.

Natural vegetation is mostly longleaf pine, loblolly pine, slash pine, hickory, various oaks, yaupon, sweetgum, blackgum, American holly, huckleberry, and briers. The most common native grass is pineland threeawn (wiregrass).

This soil has moderate limitations for cultivated crops because of poor soil qualities. Kenansville soil can be cultivated safely with ordinary good farming methods, but droughtiness and rapid leaching of plant nutrients limit the choice of crops and the potential yields of adapted crops. Conservation tillage helps control erosion and conserve moisture. With good management, such crops as corn, soybeans, and peanuts can be grown. Row crops need to be planted on the contour, and crop rotations need to include cover crops to protect the soil from erosion. Best yields require good seedbed preparation and regular applications of fertilizer and lime. Irrigation of high value crops is usually feasible where irrigation water is readily available.

This soil is well suited to use as pasture. Deep-rooting plants, such as coastal bermudagrass and bahiagrass, are well adapted. They produce well if fertilizer and lime are applied to the soil. Controlled grazing is important to maintain vigorous plants for maximum yields and good cover.

The potential productivity for pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has slight limitations for building sites and local roads and streets. It has slight limitations for septic tank absorption fields. Seepage is a severe limitation for sewage lagoons and sanitary landfills. If this soil is used for these purposes, the floor and sidewalls should be sealed.

This soil has severe limitations for recreational development because it is too sandy. Suitable topsoil or some form of surfacing can reduce or overcome this limitation. Slope is a limitation for playgrounds.

This Kenansville soil is in capability subclass IIs and in woodland suitability group 10S.

68—Florala loamy fine sand, 0 to 2 percent slopes. This soil is somewhat poorly drained and nearly level. It is in low areas on uplands. Individual areas of this soil range mostly from 10 to more than 30 acres; a few areas are as small as 2 acres. Slopes are smooth to concave.

Typically, the surface layer is loamy fine sand 10 inches thick. It is very dark gray to a depth of 6 inches and dark gray below that. The subsoil extends to a depth of at least 80 inches. To a depth of 30 inches, it is light olive brown and yellow fine sandy loam that has plinthite, and below that, it is sandy clay loam that is mottled in shades of gray, brown, yellow, and red.

Included with this soil in mapping are small areas of Albany, Dothan, Escambia, Fuquay, Leefield, Pantego, and Stilson soils. Also included are a few areas of soils similar to this Florala soil except they have slopes of 2 to 5 percent, have a sandy clay and clay loam subsoil, have a dark color surface layer more than 10 inches thick, or they are moderately well drained and poorly drained. Included are areas of soils similar to the Florala soil that do not have plinthite and that are sandy within a depth of 60 inches. The included soils make up less than 20 percent of the map unit.

This Florala soil has a high water table at a depth of 18 to 30 inches for 1 to 4 months annually. In about 25 to 35 percent of this soil, the high water table is at a depth of 10 to 18 inches for short periods. The available water capacity is low in the surface layer and moderate or high in the subsoil. Permeability is moderately rapid in the surface layer, moderate in the upper part of the subsoil, and slow in the lower part. The organic matter content is low or moderately low. The internal drainage rate under natural conditions is slow, and response to artificial drainage is moderate.

The natural vegetation is mostly longleaf, loblolly, and slash pines. The understory is gallberry and waxmyrtle. Pitcherplants are in poorly drained areas. The most common native grass is pineland threeawn (wiregrass). Other grasses are bluestem, panicum, carpetgrass, and longleaf uniola.

This Florala soil has moderate limitations for cultivated crops. The variety of adapted crops is somewhat limited by occasional wetness. Corn and peanuts are adapted if properly managed. Simple ditching to remove excess surface water during rains is needed for most crops. Crop rotations need to include cover crops that remain on the land at least half the time. Crop residue and the cover crops need to be left on the ground to protect the soil from erosion. Conservation tillage helps conserve moisture and control erosion. Maximum yields require good seedbed preparation and applications of fertilizer and lime to the soil.

This soil is well suited to pasture and hay. Improved pasture plants, such as clovers, tall fescue, coastal bermudagrass, and improved bahiagrass, are well adapted. They grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields.

The potential productivity of pine trees is high. Equipment use limitations and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

The Florala soil has moderate limitations for use as building sites, local roads and streets, lawns, landscaping, golf fairways, and paths and trails because of wetness. It has moderate limitations for camp areas, picnic areas, and playgrounds because of wetness and slow permeability. Seepage and slope are moderate limitations for sewage lagoons. The sidewalls need to be sealed. This soil has severe limitations for trench and area sanitary landfills because of wetness. It has severe limitations for septic tank absorption fields because of wetness and slow permeability. Alternative systems can overcome these limitations.

This Florala soil is in capability subclass IIw and in woodland suitability group 11W.

69—Florala loamy fine sand, 2 to 5 percent slopes. This soil is somewhat poorly drained and gently sloping. It is on seepage slopes on uplands. Individual areas of this soil range mostly 5 to more than 30 acres; a few areas are as small as 2 acres. Slopes are concave.

Typically, the surface layer is very dark gray loamy fine sand 8 inches thick. The subsurface layer is loamy fine sand or loamy sand to a depth of 17 inches. It is yellowish brown to a depth of 12 inches and brownish yellow below that. The subsoil is fine sandy loam to a depth of at least 80 inches. It is brownish yellow to a depth of 28 inches, and to a depth of 39 inches, it is light yellowish brown with plinthite. Below that, it is reticulately mottled in shades of brown, yellow, red, and gray.

Included with this soil in mapping are small areas of Bibb, Dothan, Escambia, Fuquay, Kinston, Leefield, and Stilson soils. Also included are a few areas of soils similar to this Florala soil except they have slopes of 0 to 2 percent and 5 to 8 percent, they are moderately well drained, they do not have plinthite (mostly at drainage heads), they have less than 18 percent clay in the upper part of the subsoil, or they are sandy within a depth of 60 inches. Included are areas of soils that are poorly drained at seepage spots. The included soils make up less than 25 percent of the map unit.

This Florala soil has a high water table at a depth of 18 to 30 inches for 1 to 4 months annually. In about 20 to 30 percent of this soil, the high water table is at a depth of 10 to 18 inches for short periods. The available water capacity is low in the surface and subsurface layers and moderate or high in the subsoil. Permeability is moderately rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. The organic matter content is low or moderately low. The internal drainage rate under natural conditions is slow, and response to artificial drainage is moderate.

The natural vegetation is mostly longleaf, loblolly, and slash pine. The understory is gallberry and waxmyrtle. Pitcherplants are in poorly drained areas. The most common native grass is pineland threeawn (wiregrass). Other grasses are bluestem, panicum, carpetgrass, and longleaf uniola.

This Florala soil has moderate limitations for cultivated crops because of the hazard of erosion. The variety of adapted crops is somewhat limited by access and wetness. Corn and peanuts are adapted if properly managed. Terraces that have stabilized outlets, contour cultivation of row crops in alternate strips with cover crops that remain on the land at least half the time, crop residues and soil-improving cover crops left on the ground, and conservation tillage, help conserve moisture and control erosion. Maximum yields require good seedbed preparation and applications of fertilizer and lime to the soil.

This soil is well suited to pasture and hay. Improved pasture plants, such as clovers, tall fescue, coastal bermudagrass, and improved bahiagrass, are well adapted. They produce well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants and a good ground cover.

The potential productivity of pine trees is high. Equipment use limitations and plant competition are moderate. Slash, loblolly, and longleaf pines are the best trees to plant.

This soil has moderate limitations for use as building sites, local roads and streets, lawns, landscaping, golf fairways, and paths and trails because of wetness. It has moderate limitations for camp areas, picnic areas, and playgrounds because of wetness and slow percolation. Seepage and slope are moderate limitations for sewage lagoons. The sidewalls should be sealed. This soil has severe limitations for trench and area sanitary landfills because of wetness. It has severe limitations for septic tank absorption fields because of wetness and slow percolation. Alternative systems can overcome these limitations.

This Florala soil is in capability subclass IIe and in woodland suitability group 11W.

70—Shubuta fine sandy loam, 2 to 5 percent slopes. This soil is well drained and gently sloping. It is on uplands. Individual areas of this soil range from 3 to 30 acres.

Typically, the surface layer is very dark grayish brown fine sandy loam 6 inches thick. The subsurface is dark brown fine sandy loam to a depth of 11 inches. The subsoil extends to a depth of at least 80 inches. It is yellowish red clay to a depth of 17 inches, red clay to a depth of 34 inches, red sandy clay to to a depth of 51 inches, and sandy clay and clay that is mottled in shades of yellow, brown, red, and gray below that.

Included with this soil in mapping are small areas of Angie, Bonneau, Dothan, Florala, Lucy, Norfolk, and Orangeburg soils. Also included are soils similar to Shubuta soil; some have mottles in chroma of 1 or 2 at a depth of less than 30 inches, some have a sandy or loamy substratum, and some have a loamy sand surface layer. Small, moderately eroded areas and soils that have slopes of less than 2 percent or more than 5 percent are included. The included soils make up less than 25 percent of the map unit.

This Shubuta soil has moderate or high available water capacity. Permeability is moderate in the surface and subsurface layers and moderately slow in the subsoil. The organic matter content is moderately low or moderate. Runoff in unprotected areas is rapid. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is chiefly loblolly pine, longleaf pine, slash pine, Florida maple, water oak, willow oak, sumac, American holly, southern magnolia, tuliptree, yaupon, common sweetleaf, and cedar. Pineland threeawn (wiregrass) and broomsedge bluestem are the most common native grasses.

This Shubuta soil has moderate limitations for cultivated crops because of the hazard of erosion. The variety of well adapted crops is somewhat limited by a restricted root zone. Corn, soybeans, and oats grow moderately well if properly managed. Moderate erosion control measures are needed. Well designed terraces that have stabilized outlets; row crops planted on the contour in alternate strips with cover crops that remain on the soil at least half of the time; crop residue and cover crops left on the land; and conservation tillage help control erosion and conserve moisture. Maximum yields require good seedbed preparation and applications of fertilizer and lime to the soil.

This soil is well suited to use as pasture. Improved pasture plants, such as clovers, coastal bermudagrass, and bahiagrass are well adapted and grow well if properly managed. This soil requires fertilizer and lime, and controlled grazing is needed to maintain vigorous plants for highest yields and good soil cover.

The potential productivity of pine trees is moderately high. Equipment use limitations are moderate. Loblolly and slash pines are the best trees to plant.

This soil has moderate limitations for use as building sites because of shrinking and swelling. Backfill and reinforced foundations can reduce this limitation. Low strength is a severe limitation for local roads and streets. The moderately slow permeability is a severe limitation for septic tank absorption fields. Alternative systems or sandy fill material can reduce this limitation.

This soil has moderate limitations for camp areas, picnic areas, and playgrounds because of the moderately slow permeability. Slope is also a limitation for playgrounds. This soil has slight limitations for paths and trails.

This Shubuta soil is in capability subclass IIe and in woodland suitability group 10C.

71—Shubuta fine sandy loam, 5 to 12 percent slopes. This soil is well drained and sloping to strongly sloping. It is on side slopes on uplands. Individual areas range from 3 to 300 acres.

Typically, the surface layer is dark yellowish brown sandy loam 5 inches thick. The subsurface layer is yellowish brown sandy loam to a depth of 11 inches. The subsoil is clay to a depth of at least 80 inches. It is yellowish red to a depth of 46 inches and is mottled in gray, yellowish brown, strong brown, and red below that.

Included with this soil in mapping are small areas of Angie, Bonneau, Cowarts, Lucy, Norfolk, and Orangeburg soils. Also included are areas of Shubuta soils on nearly level to gently sloping ridgetops that are too small and narrow to delineate. About 10 to 30 percent of the soils are unnamed soils that have slopes of 12 to 25 percent, and about 2 to 5 percent are very small areas of unnamed soils that have slopes as steep as 70 percent, more often at stream heads. The included soils make up less than 30 percent of the map unit.

This Shubuta soil has moderate to high available water capacity. Permeability is moderate in the surface and subsurface layers and moderately slow in the subsoil. The organic matter content is moderately low or moderate. Runoff is very rapid in unprotected areas, and erosion is a very severe hazard. This soil does not have a high water table within a depth of 6 feet.

The natural vegetation is mostly loblolly pine, longleaf pine, slash pine, Florida maple, American holly, willow oak, sumac, water oak, tuliptree, southern magnolia, yaupon, common sweetleaf, gallberry, cedar, hickory, greenbrier, dogwood, and huckleberry. Pineland threeawn (wiregrass) and broomsedge bluestem are the most common native grasses.

This Shubuta soil has very severe limitations for cultivated crops because of the hazard of erosion. It is poorly suited to row crops because slopes are too steep to be effectively terraced and erosion measures are limited primarily to vegetative cover. When row crops are grown, they need to be planted on the contour in alternating wider strips of close-growing crops that remain on the soil at least three-fourths of the time. Conservation tillage helps control erosion and conserve moisture. Crop residue needs to be left on the land to protect the soil from erosion. Lime and fertilizer are needed for best yields of row and close-growing crops.

This soil is moderately suited to use as pasture. Coastal bermudagrass and bahiagrass are moderately well suited. When this soil is properly limed and fertilized, the potential for grazing increases and a good sod cover for protection against erosion can be produced. Grazing should be carefully controlled to maintain vigorous plants and maximum growth for good cover.

The potential productivity for pine trees is moderate. Equipment use limitations are moderate. Loblolly and slash pines are the best trees to plant.

This soil has moderate limitations for use as sites for houses and severe limitations for small commercial buildings because of slope and shrinking and swelling. Steel reinforcing rods in the foundation, sand as backfill and a base for the foundation, and leveling can reduce these limitations. This soil has severe limitations for septic tank absorption fields because of the moderately slow permeability. Alternative systems can reduce this limitation. The clayey subsoil is a severe limitation for trench sanitary landfills. Slope is a moderate limitation for area sanitary landfills and a severe limitation for sewage lagoons. Low strength is a severe limitation for local roads and streets.

This soil has moderate limitations for camp areas and picnic areas because of slope and the permeability. Slope is also a severe limitation for playgrounds. This soil has severe limitations for paths and trails because the soil erodes easily.

This Shubuta soil is in capability subclass IVe and in woodland suitability group 10C.

72—Osier fine sand. This soil is poorly drained and nearly level. It is in poorly defined drainageways of the flatwoods. Individual areas of this soil range from 5 to 200 acres. Slopes are smooth to slightly concave.

Typically, the surface layer is very dark grayish brown fine sand about 4 inches thick. The underlying material is fine sand to a depth of at least 80 inches. It is grayish brown to a depth of 20 inches, pale olive to a depth of 28 inches, light olive brown to a depth of 40 inches, pale olive to a depth of 65 inches, and light yellowish brown below that.

Included with this soil in mapping are small areas of Albany, Chipley, Hurricane, Rutlege, and Yemassee soils. Albany, Chipley, and Hurricane soils are in higher, better drained positions than Osier soil. Yemassee soils are in about the same position but closer to streams, and Rutlege soils are wetter and are subject to frequent flooding. Also commonly included are soils similar to Osier soil except they have higher chromas in the subsoil. The included soils make up less than 30 percent of the map unit.

This Osier soil has a high water table at or near the surface for 3 to 6 months in most years. The available water capacity is very low or low. Permeability is rapid throughout. Internal drainage is low when impeded by the high water table. The organic matter content is moderate or high. Response to artificial drainage is rapid.

Natural vegetation consists mostly of slash, loblolly, and longleaf pine. The understory is pineland threeawn (wiregrass), gallberry, greenbrier, and myrtle.

This soil is poorly suited to cultivated crops because of excessive wetness and lack of established drainage or water control systems.

If water control measures are used to remove excess water, this soil is moderately well suited to use as improved pasture. Because of the difficulty of installing these measures and lack of outlets in many areas, it is seldom used for pasture.

The potential productivity of pine trees is moderately high on this soil. Equipment use limitations, seedling mortality, and plant competition are severe. Slash and loblolly pines are the best trees to plant.

This soil has severe limitations for urban uses and recreational development mainly because of wetness. A drainage plan and large amounts of fill material would be needed to make this soil suited for these uses.

This Osier soil is in capability subclass Vw and in woodland suitability group 10W.

73—Albany loamy sand. This soil is nearly level and somewhat poorly drained. It is on flatwoods. Individual areas of this soil range from 5 to 200 acres. Slopes range from 0 to 2 percent.

Typically, the surface layer is loamy sand 11 inches thick. It is very dark gray to a depth of 7 inches and dark grayish brown below that. The subsurface layer is yellowish brown loamy sand to a depth of 45 inches. The subsoil is yellowish brown and light yellowish brown sandy loam to a depth of at least 80 inches.

Included with this soil in mapping are small areas of Blanton, Chipley, and Osier soils. Also included are soils similar to Albany soil except they have a sand or loamy sand subsoil. The included soils make up less than 15 percent of the map unit.

This Albany soil has a high water table within 12 to 30 inches of the surface for 1 to 4 months annually. The available water capacity is very low in the surface and subsurface layers and low in the subsoil. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. Internal drainage is low when impeded by the high water table. The organic matter content is moderately low. Response to artificial drainage is moderately rapid.

The natural vegetation is mostly longleaf, loblolly, and slash pines intermixed with oaks and other hardwoods. The understory is gallberry, pineland threeawn (wiregrass), waxmyrtle, and scattered sawpalmetto.

This Albany soil has severe limitations for cultivated crops because of periodic wetness and thick sandy surface and subsurface layers. The number of adapted crops is limited unless water control measures are used. With adequate water control, corn, soybeans, and peanuts are moderately adapted. Good management includes row crops in rotation with close-growing cover crops that remain on the land at least two-thirds of the time and cover crops and crop residue left on the soil to protect the soil from erosion. Conservation tillage also helps conserve moisture and control erosion.

This soil is moderately suited to pasture and hay, but it requires good management to produce high yields. Coastal bermudagrass, bahiagrass, and clovers are well adapted. This soil responds well to fertilizers and lime. Simple drainage is needed to remove excess internal water in wet seasons. Grazing control is needed to maintain vigorous plants for best yields.

The potential production of pine trees is moderately high. Equipment use limitations, seedling mortality, and plant competition are moderate. Slash, longleaf, and loblolly pines are the best trees to plant.

This soil has moderate limitations for building sites, local roads and streets, and recreational uses because of the seasonal high water table. Wetness is a severe limitation for septic tank absorption fields. Alternative systems or fill can reduce this limitation. Wetness and seepage are severe limitations for sanitary landfills and sewage lagoons. If this soil is used for these purposes, the sandy sidewalls need to be sealed.

This Albany soil is in capability subclass IIIw and in woodland suitability group 11W.

Prime Farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in Walton County are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They either are used for producing food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water control structures. Public land is land not available for farming in national forests, national parks, military reservations, and state parks.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 8 percent.

About 74,212 acres, or about 11 percent of Walton County, meets the soil requirements for prime farmland. These soils occur mainly in map units 4 and 5 of the general soil map. This land is used mainly for corn, soybeans, and peanuts.

A recent trend in land use in some parts of the county has been the loss of some prime farmland to community development. The loss of prime farmland to other uses puts pressure on marginal land, which generally is more erodible, droughty, and difficult to cultivate and usually is less productive.

The following map units, or soils, make up prime farmland in Walton County. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Soils that have limitations, such as a high water table or flooding, may qualify as prime farmland if these limitations are overcome by such measures as drainage or flood control. In the following list, the measures needed to overcome the limitations of a map unit, if any, are shown in parentheses after the map unit name. Onsite evaluation is necessary to determine if the limitations have been overcome by the corrective measures.

6	Escambia sandy loam, 2 to 5 percent slopes (where artificially drained)
9	Dothan loamy sand, 0 to 2 percent slopes
10	Dothan loamy sand, 2 to 5 percent slopes
11	Dothan loamy sand, 5 to 8 percent slopes
25	Orangeburg sandy loam, 1 to 5 percent slopes
26	Orangeburg sandy loam, 5 to 8 percent slopes
28	Tifton fine sandy loam, 0 to 2 percent slopes
29	Tifton fine sandy loam, 2 to 5 percent slopes
30	Tifton fine sandy loam, 5 to 8 percent slopes
37	Angie sandy loam, 2 to 5 percent slopes (where artificially drained)
40	Escambia sandy loam, 0 to 2 percent slopes (where artificially drained)
46	Norfolk loamy sand, 2 to 5 percent slopes
52	Yemassee fine sandy loam, occasionally flooded (where artificially drained)
59	Malbis fine sandy loam, 0 to 2 percent slopes
60	Malbis fine sandy loam, 2 to 5 percent slopes

61 Malbis fine sandy loam, 5 to 8 percent slopes

68 Florala loamy fine sand, 0 to 2 percent slopes (where artificially drained)

69 Florala loamy fine sand, 2 to 5 percent slopes (where artificially drained)

70 Shubuta fine sandy loam, 2 to 5 percent slopes

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and suitabilities of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where wetness or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

John D. Lawrence, conservation agronomist, Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

About 104,000 acres in the Walton County soil survey area was used for crops and pasture, according to the 1982 Census of Agriculture. Of this total, about 35,000 acres was used for pasture and about 31,000 acres was used to produce soybeans, the major field crop. The rest is used for field or speciality crops.

The potential of the soils in Walton County for increased food production is good. About 205,000 acres of potentially good cropland is currently used as woodland and about 15,000 acres as pasture. In addition to that acreage, some land used as woodland or pasture could be used for cropland if intensive conservation measures were used to control soil blowing on sandy soils. In addition to the reserve capacity represented by this land, food production could be increased considerably by extending the latest crop production technology to all cropland in the county. This soil survey can help in the application of such technology.

The acreage in crops and pasture has remained constant, but that in woodland has been decreasing slightly as more land is used for urban development. In 1970, about 10,500 acres was in urban development. This acreage has increased about 2 percent per year for the past 10 years according to the Comprehensive Plan for Walton County. The use of this soil survey to help make land use decisions that will influence the future role of farming in the county is discussed in the section "General Soil Map Units."

Water erosion is a problem on about a third of the cropland and pastureland in Walton County. If the well drained and moderately well drained Angie, Bonifay, Bonneau, Dothan, Fuquay, Kenansville, Malbis, Lucy, Orangeburg, Norfolk, Shubuta, Stilson, Tifton, and Troup soils, and the somewhat poorly drained Escambia and Florala soils have slope of more than 2 percent, erosion is a hazard.

Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Soil erosion on farmland also results in sediment entering streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife. In many fields, preparing a good seedbed and tilling are difficult on clayey spots because the original friable surface soil has eroded away. Such spots are common in areas of the moderately eroded Angie and Shubuta soils.

Erosion control practices provide protective surface cover, reduce runoff, and increase infiltration. Vegetative cover on the soil for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soil. On livestock farms that need pasture and hay, legume and grass forage crops in the cropping system reduce erosion on erodible, sloping land. These crops also provide nitrogen and improve tilth for the following crop.

Minimizing tillage and leaving crop residue on the surface increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most soils in the survey area, but they are more difficult to use successfully on eroded soils and on soils that have a clayey surface layer, such as Angie and Shubuta soils. No-till systems for corn and soybeans are effective in reducing erosion on sloping land and can be adapted to most soils in the survey area.

Terraces, diversions, and stripcropping reduce runoff and erosion by reducing the length of slope. These practices are more practical on deep, well drained soils that have regular slopes. Diversions, and sod waterways, which reduce runoff and erosion, can be installed on most soils in the county. It is more difficult to install terraces and diversions successfully on soils that have a clayey surface layer. Contour farming to reduce erosion is most suited to soils that have smooth, uniform slopes, including most areas of the Bonifay, Bonneau, Dothan, Fuquay, Lucy, Orangeburg, Lakeland, Norfolk, Shubuta, Tifton, and Troup soils.

Wind erosion is a hazard on soils that have a sandy and or loamy sand surface layer. About 521,693 acres, or 78 percent of the county's cropland soils, is sandy and is subject to wind erosion. Wind erosion can damage soils and tender crops in a few hours in open, unprotected areas if the winds are strong and the soil surface is dry and bare of vegetation and mulch. Maintaining plant cover and surface mulch minimizes wind erosion.

Wind erosion reduces soil fertility by removing finer soil particles and organic matter; damages or destroys crops by sandblasting; spreads diseases, insects, and weed seeds; and creates health hazards and cleaning problems. Control of wind erosion minimizes duststorms and improves air quality for more healthful living conditions.

Field windbreaks of adapted trees and shrubs, such as Carolina cherry laurel, slash pine, southern redcedar, and Japanese privet, and strip crops of small grain are effective in reducing wind erosion and crop damage. Field windbreaks and strip crops are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The intervals depend on the erodibility of the soil and the susceptibility of the crop to damage from sandblasting.

Information for the design of erosion control practices for each kind of soil is in the "Water and Wind Erosion Control Handbook-Florida," which is available in the local office of the Soil Conservation Service.

Soil drainage is a major management need on about 11.5 percent of the acreage used for crops and pasture in Walton County. Some soils are naturally so wet that the production of crops common to the area is generally not pratical. There are about 134,632 acres of the poorly drained soils, such as Bibb, Kinston, and Leon soils, and the very poorly drained soils, such as Dorovan, Johnston, Pamlico, Pantego, and Rutlege soils.

Unless artificially drained, some of the somewhat poorly drained and poorly drained soils are wet enough to cause some damage to pasture plants during the wet seasons. These are mainly the Albany, Chipley, Escambia, Florala, Hurricane, Leefield, Leon, Mandarin, and Yemassee soils. The Chipley, Hurricane, and Leon soils also have a low available water capacity and are droughty during dry periods. It is necessary to subsurface irrigate these soils for adequate pasture production.

Blanton, Foxworth, Garcon, Malbis, Pactolus, and Stilson soils have good drainage most of the year, but they tend to dry out slowly after rains. Small areas of wetter soils along drainageways and in swales are commonly included in areas of the moderately well drained soils, especially those soils that have slope of 2 to 5 percent. Artificial drainage is needed in some wetter areas.

The very poorly drained soils are very wet during the rainy periods. Water stands on the surface of most areas, and the production of good quality pastures is not possible without artificial drainage. Dorovan, Johnston, Pamlico, Pantego, and Rutlege soils are very poorly drained.

The design of both surface drainage and subsurface irrigation systems varies with the kind of soil and the pastures grown. Drains have to be more closely spaced in slowly permeable soils than in more permeable soils. A combination of surface drainage and subsurface irrigation systems is needed on these soils for intensive pasture production. Information on the drainage and irrigation for each kind of soil is in the Technical Guide available in the local office of the Soil Conservation Service.

Soil fertility is naturally low on most soils in the survey area. Most of the soils have a sand or loamy sand surface layer. Many of the soils have a loamy subsoil. In this category are the Angie, Albany, Blanton, Bonneau, Dothan, Florala, Fuquay, Garcon, Kenansville, Leefield, Lucy, Orangeburg, Norfolk, Shubuta, Stilson, Tifton, Troup, and Yemassee soils. The Bigbee, Chipley, Corolla, Eglin, Foxworth, Kureb, Lakeland, Newhan, Mandarin, Pactolus, and Resota soils have sandy material to a depth of 80 inches or more. The Eglin, Hurricane, Leon, and Mandarin soils have an organically stained layer within their sandy subsurface layer. Most of the soils have a strongly acid to very strongly acid surface layer if lime has not been added. Ground limestone is needed to raise the pH level sufficiently for good growth of crops on these soils. Nitrogen, potash, and available phosphorus levels are low in most of these soils. Additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crops, and the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and the infiltration of water into the soil. Soils that have good tilth are granular and porous.

Most soils in the survey area have a sand, loamy sand, or sandy loam surface layer that is light in color and low to moderate in organic matter content. The Dirego, Dorovan, Duckston, Johnston, Maurepas, Pamlico, Pantego, Pickney, and Rutlege soils have high organic matter content. The Johnston, Pantego, Pickney, and Rutlege soils have a dark surface layer and high organic matter content. The Dirego, Dorovan, Duckston, Maurepas, and Pamlico soils are organic or have an organic surface layer. Generally, the structure of the surface layer of these soils is weak. Soils low in organic matter content, form a slight crust following intense rainfall. The crust is slightly hard when it is dry and is slightly impervious to water. Once the crust forms, it reduces infiltration and increases runoff. This increased runoff causes soil erosion. Regular additions of crop residue, manure, and other organic material can improve soil structure and reduce crust formation.

Fall plowing is generally not a good practice in Walton County. About two-thirds of the cropland is sloping soils that are subject to damaging erosion if they are plowed and exposed all winter.

Field crops grown in the survey area include corn, soybeans, peanuts, cotton, wheat, oats, and grain sorghum. Rye is the common close-growing crop.

Special crops grown commercially in the survey area are watermelons, snap beans, cucumbers, tomatoes, chufas, popcorn, peas, and some squash, blueberries, grapes, blackberries, pecans, and nursery plants. If economic conditions are favorable, there is potential to increase the production of blueberries, grapes, blackberries, and nursery plants.

Deep soils that have good natural drainage are especially well suited to many vegetables and small fruits. About 99,552 acres of these soils are in the survey area. They are the Bonneau, Dothan, Fuquay, Kenansville, Lucy, Orangeburg, Norfolk, Shubuta, and Tifton soils that have slope of less than 8 percent. If irrigated, about 223,923 acres of Blanton, Bonifay, Lakeland, and Troup soils that have slope of less than 8 percent are very well suited to vegetables and small fruit. In addition, if adequately drained, about 73,589 acres of Albany, Chipley, Escambia, Florala, Garcon, Hurricane, Leefield, and Yemassee soils are very well suited to vegetables and small fruits.

Most of the well drained and moderately well drained soils in the survey area are suitable for orchards (fig. 15) and nursery plants. However, if these soils are in low areas that have poor air drainage and frequent frost pockets, they are not as well suited to early vegetables, small fruits, and orchards.

Pastures in the survey area are used to produce forage for beef and dairy cattle. Beef cattle cow-calf operations are the major cattle systems. Bahiagrass and coastal bermudagrass are the major pasture plants. Grass seeds can be harvested from bahiagrass for improved pasture plantings as well as commercial purposes. Many cattlemen seed small grain on cropland and overseed ryegrass on pastures in the fall for winter and spring grazing. Excess grass is harvested from coastal bermudagrass and bahiagrass as hay during the summer for feeding during the winter.

The well drained and moderately well drained Angie, Bonneau, Dothan, Fuquay, Garcon, Kenansville, Lucy, Malbis, Pactolus, Orangeburg, Norfolk, Shubuta, Stilson, and Tifton soils are well suited to bahiagrass and improved bermudagrass. The somewhat poorly drained Albany, Chipley, Escambia, Florala, Hurricane, Leefield, Mandarin, and Yemassee soils are well suited to bahiagrass, improved bermudagrass, and legumes, such as white, crimson, and arrowleaf clover, if adequate lime and fertilizer are added to these soils. Where subsurface irrigation is used, the total forage production on these soils will increase.

Pasture in many parts of the county is greatly depleted by continuous excessive grazing. Yields of pasture can be increased by adding lime and fertilizer, including legumes in the cropping system, by irrigating, and by using other management practices. The amount and kind of pasture yields are related closely to the kind of soil. Proper management of pasture is based on the relationship of soils, pasture plants, lime, fertilizer, and moisture.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and

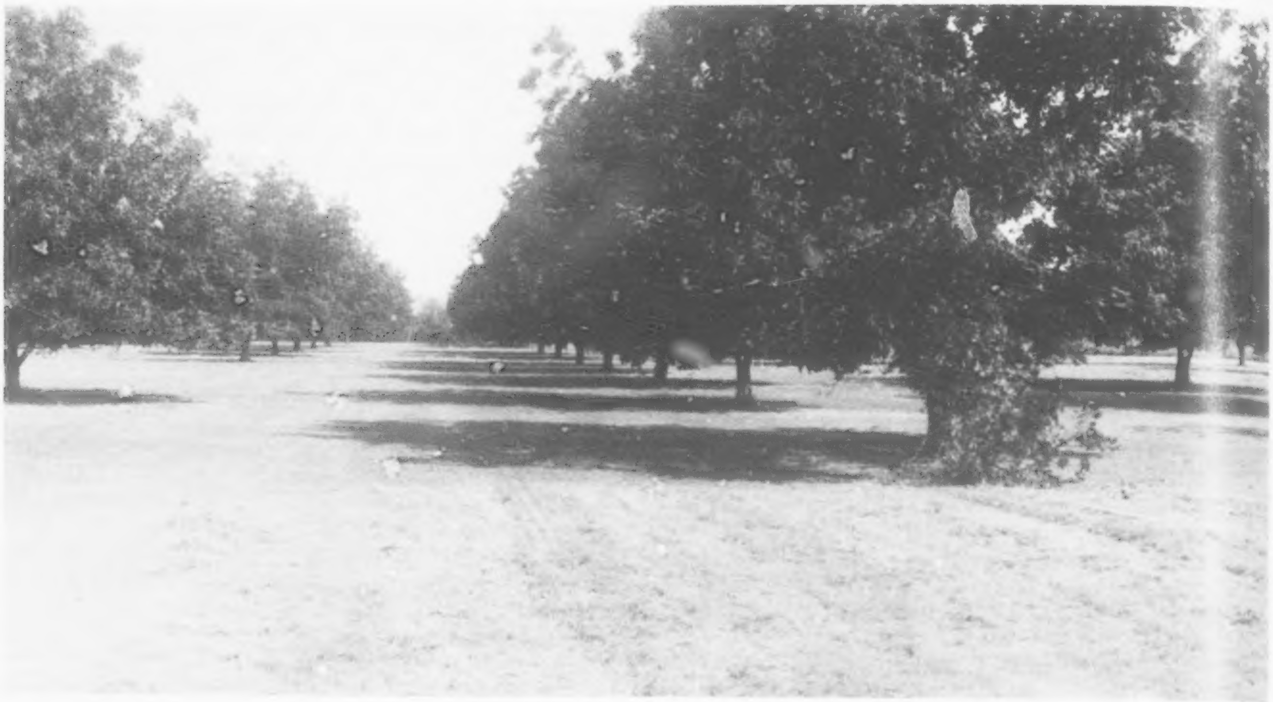

Figure 15.—Excellent pecan groves are on Lucy loamy sand, 0 to 5 percent slopes, in the northern part of Walton County.

results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that insures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major, and generally expensive, landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w, s,* or *c.*

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

Hal Brockman, forester, Soil Conservation Service, and Jacky Balkcom and Joe D'Elia, county foresters, Florida Department of Agriculture and Consumer Services, helped prepare this section.

Walton County has 541,728 acres, or 81 percent of the total land area, in productive forest land, according to the 1979 USDA Forest Survey. Of this 136,133 acres is Federal land (Eglin Air Force Base), 127,200 acres is owned by the forest industry, 46,900 acres is owned by corporate industries, and 231,495 acres is privately owned. Commercial forest land has increased 4,000 acres between 1969 and 1979. The soils and climate are well suited to timber, and forest occurs on almost all of the soils throughout the county.

Slash, longleaf, loblolly, and sand pine are the main species. Sand and longleaf pine dominate the Lakeland and Troup soils because their root systems have the ability to collect water in these dry sites. Choctawhatchee sand pine dominates Lakeland soils in the southern part of Eglin Air Force Base. The lack of replanting of longleaf pine and lack of controlled burning have encouraged the spread of Choctawhatchee sand pine northward on what was once mainly longleaf pine-turkey oak stands. Slash pine has been planted extensively throughout the county on somewhat poorly drained to moderately well drained soils and on well drained soils that have clay within 2 to 5 feet of the surface. The Albany, Blanton, Chipley, Dothan, Florala, Escambia, Fuquay, Garcon, Hurricane, Leefield, Lucy, Malbis, Mandarin, Orangeburg, Stilson, and Tifton soils are in this group. Longleaf pine has been planted on the well drained Bonifay, Bonneau, Fuquay, Lucy, and Troup soils. Loblolly pine is planted on soils where the subsoil is close to the surface or has high clay content, such as the Angie, Dothan, Norfolk, Shubuta, and Tifton soils. Many hardwood trees, such as sweetgum, blackgum, black willow, baldcypress, and sweetbay, grow in wetlands and wet depressions and on flood plains and bottom lands on Bibb, Dorovan, Johnson, Kinston, Maurepas, Pamlico, and Pantego soils. Live, laurel, water, turkey, and blackjack oaks are on the sandhills on Blanton, Bonifay, Foxworth, Fuquay, Kureb, Lakeland, Lucy, Orangeburg, and Resota soils. These hardwoods have little commercial value, although they are valuable for wildlife.

Timber management varies from intensive thinning, clearcutting, site preparation, and planting on corporate land to less intensive selective cutting and harvest on private land. Prescribed burning is important in reducing "rough" and in exposing mineral soils as a seedbed for natural reproduction. It also encourages grasses and forbs, which help support various wildlife, such as deer, turkey, dove, and quail.

A good market for pine trees is available even though there is not a major wood-using industry in the county. Several small lumber mills are scattered throughout the county. Several major pulp and paper mills, plywood, and saw mills, and a pole and piling mill are within 100 miles of DeFuniak Springs. The majority of the local hardwoods has little value for use for pulp and paper production. All of the woodland areas are considered very valuable as habitat for wildlife. Woodland areas help control erosion and improve water quality. They provide natural beauty and many recreational benefits.

More detailed information on woodland and forest management can be obtained from the local offices of the Soil Conservation Service, the Florida Division of Forestry, and the Cooperative Extension Service.

Soils vary in their ability to produce trees. Depth, fertility, texture, and the available water capacity influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. Available water capacity and depth of the root zone are major influences of tree growth. Elevation and aspect are of particular importance in mountainous areas.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to fertilization than others, some are more susceptible to landslides and erosion after building roads and harvesting timber, and some require special efforts to reforest. In the section "Detailed soil map units," each map unit in the survey area suitable for producing timber presents information about productivity, limitations for harvesting timber, and management concerns for producing timber. The common forest understory plants are also listed. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

The first tree listed for each soil under the column "Common trees" is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

Table 7 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation for use and management. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the soil. The letter *S* indicates a dry, sandy soil. The letter *A* indicates a soil that has no significant restrictions or limitations for forest use and management. If a soil has more than one limitation, the priority is as follows: W, C, and S.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation activities or harvesting operations expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of *moderate* or *severe* indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning of harvesting and reforestation operations, or use of specialized equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, or susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment must be used. On the steepest slopes, even tracked equipment cannot operate; more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by soil wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are steep enough that wheeled equipment cannot be operated safely across the slope, if soil wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts ground-based equipment, or if special equipment is needed to avoid or reduce soil compaction. The rating is *severe* if slopes are steep enough that tracked equipment cannot be operated safely across the slope, if soil wetness restricts equipment use for more than 6 months per year, if stoniness restricts ground-based equipment, or if special equipment is needed to avoid or reduce soil compaction. Ratings of *moderate* or *severe* indicate a need to choose the most suitable equipment and to carefully plan the timing of harvesting and other management operations.

Ratings of *seedling mortality* refer to the probability of death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall as influenced by kinds of soil or topographic features. *Seedling mortality* is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth and duration of the water table, rooting depth, and the aspect of the slope. Mortality generally is greatest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of *moderate* or *severe* indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing surface drainage, or providing artificial shade for seedings. Reinforcement planting is often needed if the risk is *moderate* or *severe*.

Ratings of *windthrow hazard* consider the likelihood of trees being uprooted by the wind. Restricted rooting depth is the main reason for windthrow. Rooting depth can be restricted by a high water table or by a combination of such factors as soil wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of *moderate* or *severe* indicate the need for care in thinning or possibly not thinning. Specialized equipment may be needed to avoid damage to shallow root systems in partial cutting operations. A plan for periodic salvage of windthrown trees and the maintenance of a road and trail system may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. *Plant competion* becomes more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants reduces adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants reduces natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A *moderate* or *severe* rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The potential productivity of *common trees* on a soil is expressed as a *site index*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate.

The soils that are commonly used to produce timber have the yield predicted in cubic meters. The yield is predicted at the point where mean annual increment culminates.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The procedure and technique to determine site index are given in the site index tables used for the Walton County soil survey *(3, 5, 6, 7, 15, 17, 21)*.

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic meters per hectare per year. Cubic meters per hectare can be converted to cubic feet per acre by multiplying by 14.3. It can be converted to board feet by multiplying by a factor of about 71. For example, a productivity class of 8 means the soil can be expected to produce 114 cubic feet per acre per year at the point where mean annual increment culminates, or about 568 board feet per acre per year.

Trees to plant are those that are used for reforestation or, if suitable conditions exist, natural regeneration. They are suited to the soils and will produce a commercial wood crop. Desired product, topographic position (such as a low, wet area), and personal preference are three factors of many that can influence the choice of trees to use for reforestation.

Recreation

Recreational opportunities in Walton County are excellent. The many rivers and streams and the Gulf of Mexico provide good swimming, boating, and fishing. Eglin Air Force Base is in the southwestern part of the county. It has beaches and boating, canoeing, camping, cycling, fishing, and hunting activities. Grayton Beach and Basin Bayou State Parks have facilities for picnicking, sunbathing, hiking, swimming, camping, and other recreation activities. Fishing is popular in Choctawhatchee Bay and River, Juniper Lake, and numerous other lakes and ponds. Walton County has 24 miles of white beaches on the Gulf that are used for swimming, sunbathing, and other recreation.

In table 8, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

John F. Vance, Jr., biologist, Soil Conservation Service, and Lewis Jeter, wildlife biologist, Florida Game and Fresh Water Fish Commission, helped prepare this section.

Wildlife is a valuable resource of Walton County. Large, undeveloped areas support a large variety and number of wildlife species. Most of the county provides good habitat for wildlife, especially the woodland in the northern third of the county, Eglin Air Force Base, and the Point Washington Wildlife Management Area.

Game and fur-bearing animals include bobwhite quail, mourning dove, rabbit, gray squirrel, fox squirrel, white-tailed deer, turkey, waterfowl, red fox, gray fox, bobcat, coyote, and raccoon. A variety of songbirds, woodpeckers, predatory birds, wading birds, reptiles, and small mammals are common; occasionally wild hogs and black bear are seen. Small game is all over the county, but deer, turkey, and waterfowl are less common. Deer populations are greatest in the large wooded tracts of the sandhills and swamps. Turkey populations, which have declined during the past few years, are fairly low. Most turkey are along the river bottoms and on Eglin Air Force Base. Waterfowl are sparse.

A wide variety of fish are in the streams, lakes, and reservoirs of the county. The most commonly sought game fish include largemouth bass, bluegill, redear, spotted sunfish, redbreast sunfish, black crappie, pickerel, and warmouth. Nongame fish include eels, shad, bowfin, catfish, gar, suckers, and shiners.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, soybeans, and millet.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, lespedeza, partridge pea, hairy indigo, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wild grape, honeysuckle, blackberry, greenbrier, low panicums, ragweed, paspalams, sawpalmetto, and gopher apple.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, wild cherry, sweetgum, gallberry, dogwood, hickory, blackberry, horse sugar, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are pyracantha, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cedar, and cypress.

Wetland plants are annual and perennial, wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity and slope. Examples of wetland plants are smartweed, wild millet, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas in Walton County are wetness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, meadowlark, bobcat, deer, field sparrow, cottontail, and fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, bobwhite quail, woodcock, thrushes, woodpeckers, squirrels, fox, cottontail rabbit, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, herons, shore birds, otter, mink, and beaver.

Engineering

David L. Clay, area engineer, Soil Conservation Service, helped prepare this section.

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet, and because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information in the tables is not site specific and does not eliminate the need for onsite investigation of the soils. Additional testing and analysis by personnel experienced in the design and construction of engineering works may be needed.

State and local government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations must be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to: evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are somewhat restrictive for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are unfavorable and special design, soil reclamation, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to a cemented layer, or a very firm dense layer, soil texture, and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to a cemented layer, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to a cemented layer, a high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to a cemented layer, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are somewhat restrictive for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are unfavorable and special design, soil reclamation, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to a cemented layer, and flooding affect absorption of the effluent. A cemented layer can interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 foot or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to a cemented layer, flooding, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and cemented layers can cause construction problems.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a cemented layer, a high water table, slope, and flooding affect both trench and area landfills. Texture, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing and seepage.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over a cemented layer, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by a high water table and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential or slopes of 15 to 25 percent. Depth to the water table is 1 foot to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil) and the thickness of suitable material. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. The organic matter greatly increases the absorption and retention of moisture and releases a variety of plant-available nutrients as it decomposes.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are restrictive for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are unfavorable and special design, soil reclamation, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of organic matter or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and the salinity of the soil.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to a cemented layer, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by depth to a cemented layer, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by depth to a cemented layer. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, and depth to a cemented layer affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness, slope, and depth to a cemented layer affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 20.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Sandy clay loam," for example, is soil that is 20 to 35 percent clay, less than 28 percent silt, and 45 percent or more sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 20.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area, or from nearby areas, and on field examination.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They influence the soil's absorption of cations, moisture retention, shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion and the amount of soil lost. Soils are grouped according to the following distinctions:

1. Sands, coarse sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.

7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.

8. Stony or gravelly soils and other soils not subject to wind erosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional*, or *frequent*. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (there is a near 0 to 5 percent chance of flooding in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (there is a

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5 to 50 percent chance of flooding in any year). *Frequent* means that flooding occurs often under normal weather conditions (there is more than a 50 percent chance of flooding in any year). *common* is used when classification as occasional or frequent does not affect interpretations. Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. November-May, for example, means that flooding can occur during the period November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely, thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons, which are characteristic of soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, *perched*, *artesian*, or *apparent;* and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

The two numbers in the "High water table-Depth" column indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that the water table exists for less than a month.

Fluctuations in depth to the water table of selected soils in Walton County and the rainfall are shown in table 17. The data resulted from a study of water tables and rainfall performed over a period of 3 to 6 years.

Cemented pans are cemented or indurated subsurface layers within a depth of 5 feet. Such pans cause difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated, or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated, or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severely corrosive environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Physical, Chemical, and Mineralogical Analyses of Selected Soils

Dr. V.W. Carlisle, professor of soil science, and Dr. M.E. Collins, assistant professor of soil science, Soil Science Department, University of Florida, prepared this section.

The results of physical analysis of several typical pedons in the survey area are given in table 17 and the results of chemical analysis in table 18. Mineralogical properties are given in table 19. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Characterization Laboratory at the University of Florida. Laboratory data and profile information for additional soils occurring in Walton County as well as for other counties in Florida are on file at the Soil Science Department, University of Florida.

Soils were sampled from pits at carefully selected locations. Samples were air-dried, crushed, and sieved through a 2-millimeter screen. Most analytical methods used are outlined in Soil Survey Investigations Report No. 1 *(20)*.

Particle-size distribution, given in table 17, was determined using a modified pipette method with sodium hexametaphosphate dispersion. Hydraulic conductivity and bulk density were determined on undisturbed soil core samples. Water retention data were obtained from duplicate undisturbed soil cores placed in tempe pressure cells. Weight percentage of water retained at 100 centimeters water (1/10 bar) and 345 centimeters water (1/3 bar) were calculated from volumetric water percentages divided by bulk density. Samples were oven-dried, ground to pass a 2-millimeter sieve, and the 15-bar water retention was determined.

Extractable bases, shown in table 18, were obtained by leaching soils with ammonium acetate buffered at pH 7.0. Sodium and potassium in the extract were determined by flame emission, and the content of calcium and magnesium was determined by atomic absorption spectrophotometry. Extractable acidity was determined by the barium chloride-triethanolamine method at pH 8.2. The sum of cations, cation-exchange capacity, was calculated by adding the values of extractable bases and extractable acidity. Base saturation is the ratio of extractable bases to cation-exchange capacity expressed as percentage. Organic carbon was determined by a modification of the Walkley-Black wet combustion method. Electrical conductivity determinations were made with a conductivity bridge on 1:1 soil-to-water mixtures. The pH measurements were made with a glass electrode using a soil-to-water ratio of 1:1, a 0.1 *M* calcium cloride solution in a 1:2 soil-to-solution ratio; and a 1 *N* potasium cloride solution in a 1:1 soil-to-solution ratio.

The percentages of iron and aluminum extractable in sodium dithionite-citrate were determined by atomic absorption spectrophotometry. Aluminum, carbon, and iron were extracted from probable spodic horizons with 0.1 *M* sodium pyrophosphate. The percentages of aluminum and iron were determined by atomic absorption, and the percentages of extracted carbon by the Walkley-Black wet combustion method.

Mineralogy of the less than 0.002 millimeter clay fraction was ascertained by X-ray diffraction. Peak heights at 18-, 14-, 10-, 7.2-, 4.83-, and 4.31-angstrom positions represent montmorillonite, interstratified expandable vermiculite or 14-angstrom intergrades, mica (illite), kaolinite, gibbsite, and quartz, respectively. Peaks were measured, summed, and normalized to give percentages of soil minerals identified in the X-ray diffractograms. These percentage values do not indicate absolute determined quantities of soil minerals but do imply a relative distribution of minerals in a particular mineral suite. Determining absolute percentages would require additional knowledge of particle-size, crystallinity, unit structure substitution, and matrix problems.

Sands are the dominant particle-size fraction in practically all horizons of all pedons listed in table 18. Chipley, Foxworth, Hurricane, Kureb, Lakeland, Newhan, Pickney, Resota, and Rutlege soils contain more than 90 percent sand to a depth of more than 2 meters. All of these soils and the Mandarin soil contain less than 5 percent clay throughout. Blanton, Bonifay, Fuquay, Leefield, Leon, Mandarin, Pactolus, and Troup soils contain more than 70 percent sand. Clay content increases below a depth of 1 meter in Blanton, Bonifay, Escambia, Florala, Fuquay, Leefield, Stilson, and Troup soils, ranging from a low of 10.0 percent in the Florala soil to 30.1 percent in the Stilson soil. Increased amounts of clay ranging from 10.5 to 58.9 percent occur within a depth of 1 meter in Angie, Dothan, Malbis, Orangeburg, Shubuta, Tifton, and Yemassee soils. Since there is a general tendency for clays to move downward with percolating water, the amount of translocated clay often reveals the state or degree of soil development. Silt content generally ranges between 4 and 10 percent; however, silt in excess of 18 percent is in the Angie, Escambia, Malbis, Tifton, and Yemassee soils. Conversely, the Bonifay, Chipley, Foxworth, Fuquay, Hurricane, Kureb, Lakeland, Leefield, Leon, Mandarin, Newhan, Orangeburg, Pactolus, Resota, Rutlege, and Stilson soils have one or more horizons that are less than 4 percent silt. Fine or medium sands dominated the sand fractions of most pedons sampled. Most horizons of Chipley, Foxworth, Hurricane, Kureb, Lakeland, Leon, Mandarin, and Newhan soils contain 50 percent or more medium sands, but 50 percent or more fine sands only occur in most horizons of Blanton and Leefield soils. Most horizons of Angie, Florala, Malbis, Shubuta, Tifton, and Yemassee soils contain more than 10 percent very fine sand. Similarly, coarse sands in excess of 10 percent are in most horizons of Bonifay, Chipley, Dothan, Escambia, Fuquay, Hurricane, Orangeburg, Pactolus, and Troup soils. With exception of the Dothan, Escambia, Fuquay, Orangeburg, Pactolus, and Troup soils, very coarse sand fractions generally occur in amounts of less than 1 percent.

Very low hydraulic conductivity values of less than 5 centimeters/hectare were recorded throughout the entire profile of the Malbis and Yemassee soils and in most subsoil horizons of the Angie, Blanton, Bonifay, Dothan, Escambia, Florala, Fuquay, Leefield, Shubuta, Stilson, and Tifton soils. Increased amounts of clay are in the deeper horizons of the Angie, Dothan, Escambia, Florala, Fuquay, Leefield, Malbis, Shubuta, Stilson, Tifton, and Yemassee soils. Some of these horizons have hydraulic conductivity values of less than 1 cemtimeter/hectare. Design and function of septic tank absorption fields are affected by such low hydraulic conductivity values. Spodic horizons of Leon and Mandarin soils have higher hydraulic conductivity values than are generally recorded for these horizons in most Florida Spodosols.

The available water capacity can be estimated from bulk density and water content data. Generally, excessively sandy soils, such as Blanton, Chipley, Foxworth, Kureb, Lakeland, Newhan, Resota, and Troup, contain low amounts of organic matter and retain low amounts of available water. Droughtiness is a common characteristic of these sandy soils. Angie, Escambia, Florala, Leefield, Malbis, Orangeburg, Pactolus, Shubuta, Tifton, and Yemassee soils retain relatively large amounts of available water.

Most Walton County soils contain a low amount of extractable bases (table 18). All horizons of the Blanton, Chipley, Florala, Foxworth, Hurricane, Kureb, Lakeland, Leon, Mandarin, Newhan, Pactolus, Pickney, Resota, Rutlege, Tifton, and Troup soils contain less than 1 milliequivalent per 100 grams extractable bases. Extractable bases of less than 0.5 milliequivalents per 100 grams in all horizons of the Chipley, Florala, Hurricane, Lakeland, Mandarin, Newhan, Pickney, and Rutlege soils. Bonifay, Dothan, Escambia, Fuquay, Leefield, Malbis, Orangeburg, Shubuta, and Stilson soils contain at least one horizon that has extractable bases ranging from 1 to 3 milliequivalents per 100 grams. Only Dirego, Dorovan, Maurepas, Pamlico, and Angie soils have horizons that have more than 5 milliequivalents per 100 grams extractable bases.

The mild, humid climate in Walton County results in depletion of basic soil cations (calcium, magnesium, sodium, and potassium) through leaching. Calcium is the dominant base in all soils. Magnesium in amounts of more than 1 milliequivalent per 100 grams is in some horizons of the Angie, Dirego, Dorovan, Maurepas, Pamlico, Shubuta, and Yemassee soils. Much lower, but detectable amounts of magnesium and amounts of less than 0.1 milliequivalent per 100 grams of sodium are in all horizons of all other pedons. Most Walton County soils contain very low amounts of potassium; however, one or more horizons in the Angie, Dirego, Dorovan, Maurepas, and Pamlico soils have more than 0.5 milliequivalents per 100 grams. Bonifay, Chipley, Foxworth, Fuquay, Hurricane, Kureb, Lakeland, Leon, Mandarin, Newhan, Pamlico, Resota, Rutlege, Tifton, and Troup soils have one or more horizons that have nondetectable amounts of potassium. Values for exchange capacity, an indication of plant nutrient-holding capacity, exceeds 10 milliequivalents per 100 grams in the surface horizon of Angie, Dirego, Dorovan, Escambia, Florala, Malbis, Maurepas, Orangeburg, Pactolus, Pamlico, Resota, Rutlege, and Tifton soils. Cation-exchange capacity exceeds 10 milliequivalents per 100 grams in at least one horizon below the surface horizon in the Angie, Dirego, Dorovan, Maurepas, and Pamlico soils and in the spodic horizons of the Leon and Mandarin soils. The Chipley, Foxworth, Mandarin, and Newhan soils have a low cation exchange capacity in the surface horizon. These soils require only small amounts of lime to significantly alter the base status and the reaction in the upper horizons. Generally, soils that have low values for extractable bases and cation-exchange capacity have low inherent soil fertility. Fertile soils have high values for extractable bases, base saturation, and cation exchange capacity.

Organic carbon content is more than 2 percent throughout the Dorovan and Maurepas soils; in the surface horizon of the Dirego, Escambia, Florala, Pactolus, Pamlico, Rutlege, and Shubuta soils; and in the spodic horizon of the Leon soil. In all other horizons, and throughout all other soils sampled, the organic carbon content is less than 2 percent. In most mineral soils, the organic carbon content decreased rapidly with increased depth. The Leon and Mandarin soils contain increased amounts of organic carbon content in the Bh horizon. Because organic carbon is directly related to nutrient and water retention, management practices that conserve and maintain organic carbon should be used.

Electrical conductivity values are generally very low, slightly exceeding 0.1 millimhos per centimeter, in one or two horizons of the Dorovan, Escambia, Foxworth, and Maurepas soils. The data indicate that with the exception of the Dirego soil, the content of soluble salt in Walton County soils is insufficient to detrimentally affect the growth of salt-sensitive plants.

Soil reaction in water ranges between pH 4.5 to 6.0. Reaction is slightly higher for one or two horizons in the Foxworth and Leefield soils. The values are slightly lower in the Dirego, Dorovan, Pamlico, Pickney, and Rutlege soils and in most horizons of the Escambia and Mandarin soils. With few exceptions, reaction was 0.5 to 1.5 units lower in calcium chloride and potassium chloride than in water. Maximum plant nutrient availability is generally attained when soil reaction is between pH 6.5 and 7.5; however, under Florida conditions, maintaining soil reaction above pH 6.5 is not economically feasible for most agricultural production purposes.

Sodium pyrophosphate extractable iron is 0.05 percent or less in the Bh horizon of Hurricane, Leon, and Mandarin soils. Values for the B/E horizon in the Kureb soil and the Bw horizons in Resota soil are less than 0.10 percent. The ratio of pyrophosphate extractable carbon and aluminum to clay in the Hurricane, Leon, and Mandarin soils is sufficient to meet the chemical criteria for a spodic horizon. Citrate-dithionite extractable iron in argillic horizons of Ultisols ranges from 0.20 percent in the Troup soil to 2.39 percent in the Tifton soil. Similarly, these values in the Bh horizons range from 0.03 percent in the Leon soil to 0.07 percent in the Hurricane soil. Aluminum extracted by citrate-dithionite from Bt horizons ranges from 0.05 percent in the Leefield and Stilson soils to 0.47 percent in the Tifton soil. Amounts of iron and aluminum in Walton County soils are not sufficient to detrimentally affect phosphorus availability.

The sand fraction (2.0 - 0.05 millimeters) is siliceous with quartz overwhelmingly dominant in all pedons sampled. Small amounts of heavy minerals are in most horizons; the greatest concentration is in the very fine sand fraction. No weatherable minerals were observed. Crystalline mineral components of the clay fraction (less than 0.002 millimeters) are reported in table 20 for major horizons of the pedons sampled. The clay mineralogical suite was composed of montmorillonite, a 14-angstrom intergrade, kaolinite, gibbsite, quartz, and mica.

Montmorillonite occurs in half of the pedons sampled, but detectable amounts are not in the Blanton, Bonifay, Chipley, Dothan, Escambia, Foxworth, Fuquay, Hurricane, Malbis, Newhan, Orangeburg, Tifton, and Troup soils. Clays in most pedons were dominated by 14-angstroms intergrade minerals and kaolinite. With exception of the Newhan soil, 14-angstrom intergrade minerals occur in all Walton County soils. Likewise, kaolinite is in all of the soils but the Kureb and Newhan soils. Gibbsite is in slightly less than half of the pedons sampled. It is not in Typic Quartzipsaments, Spodic Quartzipsaments, and Spodosols. With exception of the Dothan soil, all of the soils contain varying amounts of quartz. Small amounts of mica are in the Angie, Dothan, Escambia, Florala, and Shubuta soils.

Montmorillonite appears to have been inherited by Walton County soils and is probably the least stable mineral component in the present environment. Considerable volume changes can result from shrinkage upon drying and swelling upon wetting of montmorillonitic subsoils in Angie, Shubuta, and Yemassee soils. Occurrence of relatively large amounts of 14-angstrom intergrades and the general tendency for these minerals to decrease with increasing depth suggests that the 14-angstrom intergrade minerals are among the most stable species in this weathering environment. The general tendency for kaolinite to increase with increasing depth indicates that this mineral species is less stable than the 14-angstrom intergrades in the severe weathering environment near the surface. The inconsistent occurrence of gibbsite suggests it is inherited. Clay-sized quartz has mainly resulted from decrements of the silt fraction. As is usual for most Florida soils, mica (illite) occurs infrequently and in small amounts. Soils dominated by montmorillonite and 14-angstrom intergrades have a much higher cation-exchange capacity and retain more plant nutrients than soils dominated by kaolinite or quartz.

Engineering Index Test Data

Table 20 contains engineering test data made by the Soils Laboratory, Florida Department of Transportation, Bureau of Materials and Research, on some of the major soil series in the survey area. These tests were made to help evaluate the soils for engineering purposes. The classifications given are based on data obtained by mechanical analysis and by tests to determine liquid limits and plastic limits.

The mechanical analyses were made by combined sieve and hydrometer methods *(4)*. The various grain-sized fractions are calculated on the basis of all the material in the soil sample, including that coarser than 2 millimeters in diameter. The mechanical analyses used in this method should not be used in naming textural classes of soils.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of the soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from a semisolid to a plastic state, and the liquid limit is the moisture content at which the soil material changes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. The data on liquid limit and plasticity index in this table are based on laboratory tests of soil samples.

Moisture density data are important in earthwork. If soil material is compacted at a successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, density decreases with increase in moisture content. The highest dry density obtained in the compactive test is termed maximum dry density. As a rule, maximum strength of earthwork is obtained if the soil is compacted to the maximum dry density.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(19)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Psammaquents (*Psamm*, meaning sand texture, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Psammaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is siliceous, thermic Typic Psammaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual (18)*. Many of the technical terms used in the descriptions are defined in *Soil Taxonomy (19)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Albany Series

The Albany series consists of deep, somewhat poorly drained moderately permeable soils. These soils formed in sandy and loamy sediment on broad, nearly level to gently sloping uplands. The seasonal high water table is within 12 to 30 inches of the surface for 1 to 4 months during most years. Slope is 0 to 5 percent. Soils of the Albany series are loamy, siliceous, thermic Grossarenic Paleudults.

Albany soils are associated with the Bibb, Blanton, Bonifay, Bonneau, Escambia, Fuquay, Kinston, Lakeland, Leefield, Lucy, Osier, Pactolus, Stilson, and Troup soils.

Bibb and Kinston soils are poorly drained. Blanton, Bonifay, and Troup soils are better drained than Albany soils and also have a Bt horizon at a depth of more than 40 inches. Bonneau, Fuquay, Leefield, Lucy, and Stilson soils have a Bt horizon at a depth of 20 to 40 inches. Escambia soils have a Bt horizon at a depth of less than 20 inches. Lakeland, Osier, and Pactolus soils do not have a Bt horizon.

Typical pedon of Albany loamy sand, in an area of Albany-Pactolus loamy sands, 0 to 5 percent slopes; in woodland, 550 feet west and 100 feet south of the northeast corner of sec 6. T 5 N., R. 21 W.

A1—0 to 7 inches; very dark gray (10YR 3/1) loamy sand; moderate medium granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

A2—7 to 11 inches; dark grayish brown (10YR 4/2) loamy sand; common medium distinct very dark gray (10YR 3/1) mottles along root channels; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

E1—11 to 24 inches; yellowish brown (10YR 5/6) loamy sand; weak medium granular structure; very friable; strongly acid; gradual wavy boundary.

E2—24 to 45 inches; yellowish brown (10YR 5/6) loamy sand; common medium distinct light yellowish brown (10YR 6/4) mottles and few fine distinct strong brown (7.5YR 5/8) mottles; weak medium granular structure; very friable; strongly acid; gradual wavy boundary.

Bt1—45 to 52 inches; yellowish brown (10YR 5/6) sandy loam; common medium distinct yellowish red (5YR 4/6) mottles and few fine distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

Bt2—52 to 65 inches; yellowish brown (10YR 5/6) sandy loam; common medium distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/8) mottles and few fine distinct light reddish brown (5YR 6/4) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; strongly acid; gradual wavy boundary.

Bt3—65 to 80 inches; light yellowish brown (10YR 6/4) sandy loam; common medium distinct light gray (10YR 7/2) mottles and few fine distinct strong brown (7.5YR 5/8) mottles; weak medium granular structure; very friable; strongly acid.

The solum ranges in thickness from 60 to 80 inches. Reaction ranges from extremely acid to strongly acid except where lime has been added.

The Ap or A horizon has hue of 10YR, value of 3 to 6, and chroma of 1 or 2, or hue of 2.5Y, value of 6, and chroma of 2. It ranges from 6 to 12 inches thick. Where value is less than 3.5, the A horizon is less than 10 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 2 to 8. Mottles in shades of gray, brown, red, and yellow range from none to common. Clean sand grains are common. Texture is loamy sand or sand. Combined thickness of A and E horizons ranges from 40 to less than 80 inches.

The Bt horizon has hue of 7.5YR, value of 5 to 7, and chroma of 6 or 8, or hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 3 to 8. In some pedons, the lower part of the Bt horizon does not have a matrix color and is mottled in shades of red, yellow, and gray. Texture is sandy loam or sandy clay loam. Clay content of the upper 20 inches of the Bt horizon ranges from 18 to 35 percent.

Angie Series

The Angie series consists of deep, moderately well drained, slowly permeable soils. These soils formed in clayey sediment on gently sloping uplands and strongly sloping side slopes. The seasonal high water table is at a depth of 3 to 5 feet. Slope ranges from 2 to 12 percent. Soils of the Angie series are clayey, mixed, thermic Aquic Paleudults.

Angie soils are associated with the Bonneau, Cowarts, Dothan, Fuquay, Norfolk, Orangeburg, Shubuta, and Tifton soils. Bonneau, Cowarts, Norfolk, and Orangeburg soils nave a Bt horizon that is less than 35 percent clay. Dothan, Fuquay, and Tifton soils have layers within 60 inches of the surface that are more than 5 percent plinthite. The Bt horizon in these soils is less than 35 percent clay. Shubuta soils are better drained than Angie soils.

Typical pedon of Angie sandy loam, in an area of Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes; in planted pine tree area, 700 feet east and 250 feet south of the northeast corner of sec. 17, T. 2 N., R. 19 W.

A—0 to 4 inches; dark brown (10YR 3/3) sandy loam; moderate medium granular structure; firm; many fine and common medium roots; very strongly acid; clear smooth boundary.

BA—4 to 6 inches; yellowish brown (10YR 5/6) sandy loam; moderate medium granular structure; common fine roots; few thin clay films on surface of peds; very strongly acid; clear smooth boundary.

Bt1—6 to 15 inches; strong brown (7.5YR 4/6) clay; common medium distinct yellowish red (5YR 4/6) mottles; strong medium subangular blocky structure; firm; few fine roots; patchy clay films on surface of peds; very strongly acid; gradual wavy boundary.

Bt2—15 to 27 inches; yellowish brown (10YR 5/4) clay; common fine distinct strong brown (7.5YR 5/6) mottles and common fine prominent dark red (2.5YR

3/6) mottles; strong medium subangular blocky structure; firm; few fine roots; strongly acid; gradual wavy boundary.

Bt3—27 to 35 inches; yellowish brown (10YR 5/4) clay; common medium distinct gray (10YR 6/1) mottles, common fine distinct strong brown (7.5YR 5/6) mottles, and common fine prominent dark red (2.5YR 3/6) mottles; strong medium subangular blocky structure; firm; few fine roots; patchy clay films on surface of peds; few quartz pebbles; strongly acid; gradual wavy boundary.

Cg—35 to 80 inches; light olive gray (5Y 6/2) clay; common medium prominent strong brown (7.5YR 5/8) mottles, common fine distinct brownish yellow (10YR 6/6) mottles, and few fine prominent red (2.5YR 4/2) and dark yellowish brown (10YR 4/4) mottles; black (10YR 2/1) along root channels; moderate fine subangular blocky structure; very firm; few fine roots; very strongly acid.

The solum is more than 32 inches thick. Reaction is strongly acid or very strongly acid except where lime has been added.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. Where value is less than 3.5, this horizon is less than 10 inches thick.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8 in the upper part. The lower part of the Bt horizon has similar colors to the upper part, or it is mottled or is gray with high chroma mottles. Gray mottles that have chroma of 2 or less are within 30 inches of the surface. Texture is sandy clay, clay loam, or clay. Clay content ranges from 35 to 60 percent. Mica flakes are in some pedons. The Bt horizon is 20 to 50 inches thick.

Some pedons have a BC horizon. It is similar in color to the lower part of the Bt horizon. Texture is sandy clay, clay loam, or clay. Mica flakes are in some pedons.

The Cg horizon has hue of 5Y, 2.5Y, or 10YR, value of 6 to 7, and chroma of 1 or 2 and has mottles in shades of brown, red, and yellow; or it is mottled in shades of gray, brown, red, and yellow. Texture is sandy clay loam, sandy loam, sandy clay, or clay. Mica flakes are present in many pedons.

Angie soils in Walton County are taxadjuncts to the Angie series because most pedons do not have an E horizon, have discontinuities within the solum, and have slightly more than the 60 percent clay content in the lower part of the solum than is allowed for the series. Clay content also decreases more than 20 percent with increasing depth, but it increases again at a lower depth but within a depth of 60 inches. The Angie soils in Walton County are similar in use and management to soils where the content of clay does not decrease.

Bibb Series

The Bibb series consists of deep, poorly drained, moderately permeable soils. These soils formed in highly variable, stratified loamy and sandy fluvial sediment on nearly level flood plains of creeks, streams, and rivers on the Coastal Plain. They are saturated in winter and early in spring. Slope ranges from 0 to 2 percent. Short, steep slopes up to 5 feet high are a result of stream meander. Soils of the Bibb series are coarse-loamy, siliceous, acid, thermic Typic Fluvaquents.

Bibb soils formed from, and are associated with, all the soils of the Coastal Plain. The Bonifay, Chipley, Foxworth, Fuquay, Johnston, Kinston, Lakeland, and Troup soils are dominant. Bonifay, Chipley, Foxworth, Fuquay, Lakeland, and Troup soils are on uplands of the Coastal Plain and are better drained than Bibb soils. Johnston and Kinston soils are on flood plains. Johnston soils are very poorly drained, and Kinston soils have more clay in the substratum.

Typical pedon of Bibb loam, in an area of Kinston-Bibb association, frequently flooded; on a flood plain, 1,300 feet south and 1,200 feet west of the northeast corner of sec. 14, T. 2 N., R. 17 W.

A—0 to 4 inches; dark gray (10YR 4/1) loam; weak medium granular structure; very friable; common fine roots; strongly acid, clear wavy boundary.

Ag—4 to 12 inches; dark grayish brown (10YR 4/2) loam; many medium faint dark brown (10YR 4/3) splotches; weak medium granular structure; friable; common fine and medium roots; strongly acid; clear smooth boundary.

Cg1—12 to 37 inches; grayish brown (10YR 5/2) sandy loam; many coarse distinct yellowish brown (10YR 5/4) mottles and common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few fine and common medium and coarse roots; few mica flakes; common thin strata of sand, loamy sand, and silt loam; few strata of partly decomposed layered leaves and twigs; very strongly acid; clear wavy boundary.

Cg2—37 to 65 inches; light brownish gray (10YR 6/2) sand; common medium faint pale brown splotches; single grained; loose; few mica flakes; common strata of loamy sand and silt loam; strongly acid.

The soil is strongly acid or very strongly acid throughout.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. It is 6 to 20 inches thick. Where value is 3.5 or less, this horizon is less than 6 inches thick.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 1 or 2; or it is neutral and has value of 3 to 7. The 10- to 40-inch control section is sand, loamy sand, loamy fine sand, sandy loam, fine sandy loam, loam, or silt loam. It is stratified. Content of clay averages less than 18 percent. In some pedons, the C horizon has a high content of organic matter.

Bigbee Series

The Bigbee series consists of deep, excessively drained, rapidly permeable soils. These soils formed in sandy fluvial sediment near large streams. A high water table is between depths of 20 and 40 inches for about 2 weeks each year and at a depth of 40 to 70 inches for 1 to 2 months during most years. These soils are subject to flooding. Slopes range from 0 to 5 percent. Soils of the Bigbee series are thermic, coated Typic Quartzipsamments.

Bigbee soils are geographically associated with the Bibb, Garcon, Johnston, Kinston, Rutlege, and Yemassee soils, which are wetter.

Typical pedon of Bigbee loamy sand, 0 to 5 percent slopes, occasionally flooded; 510 feet east and 450 feet north of the southwest corner of sec. 36, T. 4 N., R. 21 W.

A1—0 to 2 inches; grayish brown (10YR 5/2) loamy sand; moderate medium granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

A2—2 to 8 inches; brown (10YR 5/3) loamy sand; weak medium granular structure; very friable; common fine roots; strongly acid; gradual wavy boundary.

C1—8 to 23 inches; pale brown (10YR 6/4) loamy sand; weak medium granular structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

C2—23 to 40 inches; very pale brown (10YR 7/3) sand; common few prominent reddish yellow (5YR 6/8) mottles and common medium faint light yellowish brown (10YR 6/4) mottles; single grained; loose; strongly acid; gradual wavy boundary.

C3—40 to 52 inches; light gray (10YR 7/3) sand; few fine distinct yellowish brown (10YR 5/4) mottles; single grained; loose; strongly acid; gradual wavy boundary.

C4—52 to 58 inches; light gray (10YR 7/2) fine sand; few fine distinct pale brown (10YR 6/3) mottles and common medium faint light brownish gray (10YR 6/2) mottles; weak medium granular structure; very friable; strongly acid; gradual wavy boundary.

C5—58 to 75 inches; very pale brown (10YR 7/3) sand; single grained; loose; strongly acid; gradual wavy boundary.

C6—75 to 80 inches; white (10YR 8/2) sand; few fine faint very pale brown (10YR 7/3) mottles; single grained; loose; strongly acid.

The Bigbee soils are sand and loamy sand to a depth of at least 80 inches. These soils do not have lamellae. Reaction is medium acid to very strongly acid.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 3. It is 4 to 8 inches thick.

The upper part of the C horizon has hue of 10YR, value of 5 to 7, and chroma of 4 or 5. It is 6 to 15 inches thick. The lower part of the C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 3. In some pedons, it has mottles in shades of yellow, brown, red, and gray. The 10- to 40-inch control section has weighted average silt plus clay content of 5 to 10 percent. Few pockets of uncoated sand grains are in the lower part of the C horizon. Texture is loamy sand, sand, or fine sand. In many pedons, coarse sand or pebbles are 6 to 16 feet below the surface. Few mica flakes are in some pedons.

Blanton Series

The Blanton series consists of deep, moderately well drained, moderately to moderately slowly permeable soils that formed in sandy and loamy marine sediments (fig. 16). These soils are on broad, nearly level and gently sloping uplands. They have a perched water table above the subsoil in winter and early spring. Slope ranges from 0 to 5 percent. They are loamy, siliceous, thermic Grossarenic Paleudults.

Blanton soils are geographically associated with Albany, Bibb, Bonifay, Chipley, Foxworth, Johnston, Kinston, Lakeland, Leefield, Rutlege, Stilson, and Troup soils. Albany, Bibb, Chipley, Johnston, Kinston, Leefield, and Rutlege soils have a higher seasonal high water table than the Blanton soils. Leefield and Stilson soils have an argillic horizon at a depth of 20 to 40 inches, Albany soils have an argillic horizon below 40 inches, and Foxworth and Lakeland soils do not have an argillic horizon. Bibb, Johnston, and Kinston soils are frequently flooded, and Bonifay and Troup soils are better drained.

Typical pedon of Blanton sand, 0 to 5 percent slopes; 2,600 feet east and 100 feet south of the northwest corner of sec. 10, T. 2 S., R. 18 W.

A—0 to 6 inches; brown (10YR 5/3) sand; weak medium granular structure; very friable; many fine roots; many uncoated sand grains; extremely acid; clear wavy boundary.

E1—6 to 16 inches; yellowish brown (10YR 5/4) loamy fine sand; weak fine granular structure; very friable; common fine roots; common uncoated sand grains; extremely acid; gradual wavy boundary.

E2—16 to 35 inches; light yellowish brown (10YR 6/4) fine sand; weak fine granular structure; few fine roots; common uncoated sand grains; extremely acid; gradual wavy boundary.

E3—35 to 55 inches; very pale brown (10YR 7/4) fine sand; many coarse distinct light gray (10YR 7/2) mottles and common medium distinct yellowish brown (10YR 5/4) mottles; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

E4—55 to 65 inches; light gray (10YR 7/2) fine sand; common medium faint very pale brown (10YR 7/3)

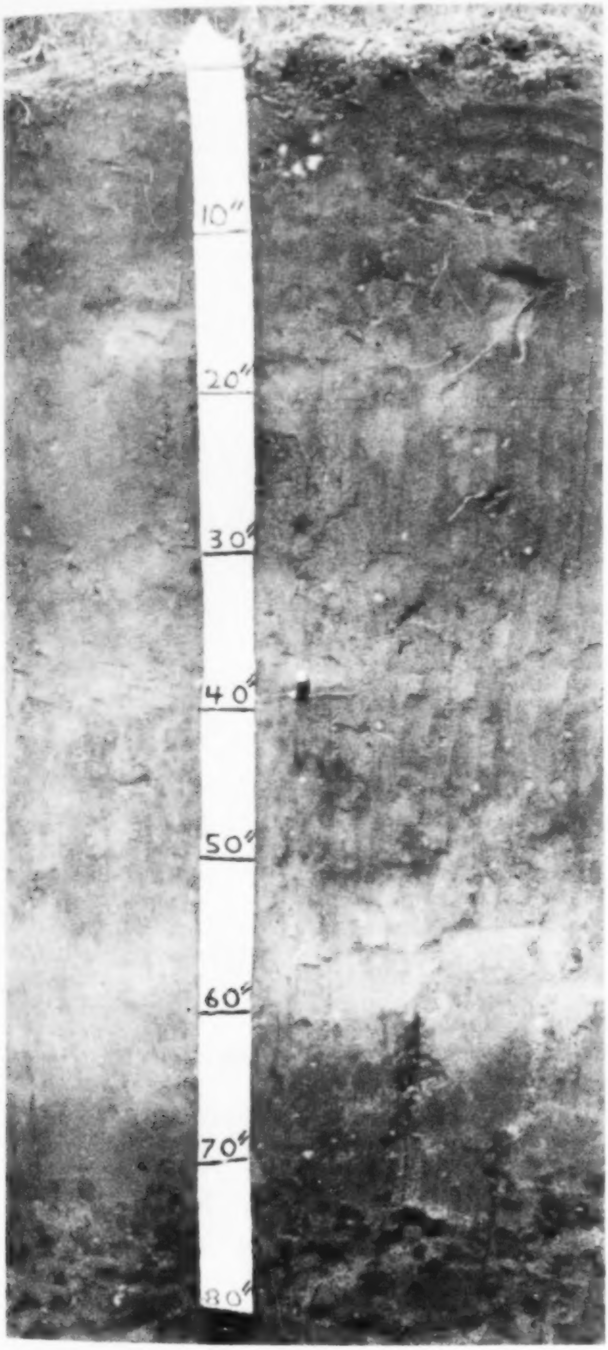

Figure 16.—A light color subsurface layer is characteristic of Blanton sand, 0 to 5 percent slopes. This layer is at a depth of 6 to 65 inches.

mottles and few fine prominent strong brown (7.5YR 5/6) mottles; single grained; loose; many uncoated sand grains; strongly acid; clear wavy boundary.

Bt1—65 to 70 inches; light yellowish brown (10YR 6/4) loamy fine sand; common medium distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/4) mottles; single grained; loose; sand grains coated with clay; extremely acid; clear wavy boundary.

Bt2—70 to 75 inches; pale brown (10YR 6/3) fine sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles with red (2.5YR 4/8) centers; moderate medium subangular blocky structure; friable; 4 percent plinthite; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

Btg—75 to 80 inches; light brownish gray (10YR 6/2) fine sandy loam; common medium distinct yellowish brown (10YR 5/4) and strong brown (7.5YR 5/8) mottles and common medium prominent red (2.5YR 4/8) mottles; weak fine subangular blocky structure; firm; extremely acid.

The solum ranges in thickness from 60 to more than 80 inches. Reaction ranges from medium acid to extremely acid throughout.

The A or Ap horizon has hue of 10YR, value of 3 to 6, and chroma of 1 to 3. It is generally 6 to 10 inches thick and is less than 10 inches where value is 3.5 or less.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 8. The gray and white colors are caused by the uncoated sand grains in the upper part of the horizon. They are indicative of wetness in the lower part. Texture ranges from sand to loamy fine sand. Combined thickness of the A and E horizon ranges from 40 to 79 inches.

The Bt and Btg horizons have hue of 2.5Y or 10YR, value of 5 to 7, and chroma of 2 to 8. Dominant gray colors are generally in the Btg horizon. Mottles in shades of brown, gray, yellow, or red are common in both horizons. Texture is sandy loam, fine sandy loam or sandy clay loam. A Bt1 horizon of loamy fine sand is in some pedons. Some pedons have up to 5 percent plinthite between depths of 60 and 80 inches.

Bonifay Series

The Bonifay series consists of deep, well drained, moderately permeable soils. These soils formed in sandy and loamy marine sediment on broad, nearly level to sloping ridges and side slopes. The high water table is at a depth of 48 to 60 inches for short periods after heavy rainfall. These soils are dry during the summer. Slope ranges from 0 to 8 percent. Soils of the Bonifay series are loamy, siliceous, thermic Grossarenic Plinthic Paleudults.

Bonifay soils are associated with the Albany, Bibb, Dothan, Fuquay, Johnston, Leefield, Lucy, Pantego, Stilson, Tifton, and Troup soils. Albany, Bibb, Johnston, and Pantego soils have a seasonal high water table closer to the surface than that of the Bonifay soils. Bibb and Johnston soils are frequently flooded, and water ponds on Pantego soils. Dothan and Tifton soils have an A horizon less than 20 inches thick, and Fuquay and Lucy soils have combined A and E horizons 20 to 40 inches thick. Leefield and Stilson soils have an argillic horizon at a depth of 20 to 40 inches. Troup soils have hue of 7.5YR or redder in the argillic horizon and have less than 5 percent plinthite within a depth of 60 inches.

Typical pedon of Bonifay loamy sand, 0 to 5 percent slopes; in a wooded area, 1,450 feet west and 100 feet north of the southeast corner of sec. 35, T. 6 N., R. 21 W.

A—0 to 7 inches; very dark grayish brown (10YR 3/2) loamy sand; moderate medium granular structure; very friable; many fine and medium roots and few coarse roots; medium acid; abrupt smooth boundary.

E1—7 to 11 inches; yellowish brown (10YR 5/4) loamy sand; weak medium granular structure; very friable; many fine and few medium roots; medium acid; gradual wavy boundary.

E2—11 to 22 inches; yellowish brown (10YR 5/6) loamy sand; weak medium granular structure; very friable; common fine roots; strongly acid; gradual wavy boundary.

E3—22 to 44 inches; brownish yellow (10YR 6/8) loamy sand; few medium faint yellowish brown (10YR 5/8) mottles; weak medium granular structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

Bt—44 to 54 inches; yellowish brown (10YR 5/6) sandy loam; few fine distinct strong brown (7.5YR 5/6) mottles and few medium and distinct very pale brown (10YR 7/4) splotches; weak medium granular structure; very friable; strongly acid; gradual wavy boundary.

Btv—54 to 72 inches; yellowish brown (10YR 5/6) sandy loam; common medium distinct strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) mottles and common medium prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure; friable; about 10 percent, by volume, firm brittle plinthite nodules; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

B't—72 to 80 inches; brownish yellow (10YR 6/6) sandy loam; many coarse distinct strong brown (7.5YR 5/8) mottles, common medium distinct yellowish red (5YR 5/8) mottles, and few medium prominent light reddish brown (2.5YR 6/4) mottles; weak medium subangular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid.

The solum ranges from 60 to more than 80 inches in thickness. Reaction is strongly acid or very strongly acid throughout except where lime has been added. Ironstone pebbles, 2 to 15 millimeters in diameter, range from 1 to 5 percent, by volume, throughout. Depth to the horizon containing more than 5 percent plinthite is commonly 50 to 60 inches but ranges from 42 to 60 inches.

The A or Ap horizon has hue of 10YR, value of 3 to 5 and chroma of 1 to 3. It is 3 to 8 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8. It is 37 to 52 inches thick. Texture is sand or loamy sand. In some pedons, masses of uncoated sand grains have hue of 10YR, value of 7 or 8, and chroma of 1 or 2.

Some pedons have a BE horizon. It is typically sandy loam, but ranges to sandy clay loam. In some pedons, it does not have mottles nor plinthite.

The Bt, Btv, and B't horizons have hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Mottles are in shades of yellow, brown, or red. The Bt, Btv, and B't horizons are sandy loam or sandy clay loam and have 15 to 35 percent clay and less than 20 percent silt. In some pedons, the Btv horizon is firm and compact and contains 5 to 25 percent, by volume, firm brittle plinthite. In some pedons, the B't horizon is reticulately mottled red, yellow, brown, and gray.

Bonneau Series

The Bonneau series consists of deep, well drained, moderately permeable soils. These soils formed in marine sandy and loamy sediment on nearly level to strongly sloping ridgetops and side slopes of the uplands. A seasonal, perched water table is at a depth of 3.5 to 5.0 feet. Slope ranges from 0 to 12 percent. Soils of the Bonneau series are loamy, siliceous, thermic Arenic Paleudults.

Bonneau soils are associated with the Angie, Bibb, Bonifay, Cowarts, Johnston, Kinston, Norfolk, Shubuta, and Troup soils. Angie, Cowarts, Norfolk, and Shubuta soils have a Bt horizon at a depth of less than 20 inches. Cowarts soils have a thinner solum than Bonneau soils, and Angie soils have a clayey subsoil. Bibb, Johnston, and Kinston soils are poorly drained and are often flooded. Bonifay and Troup soils have a Bt horizon at a depth of more than 40 inches.

Typical pedon of Bonneau loamy sand, in an area of Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes; in woodland, 2,600 feet north and 250 feet west of the southeast corner of sec. 7, T. 2 N., R. 19 W.

A—0 to 5 inches; dark grayish brown (10YR 4/2) loamy sand; moderate medium granular structure; very friable; many fine and few medium and coarse roots; few 2 to 4 mm quartz pebbles; very strongly acid; clear smooth boundary.

E1—5 to 18 inches; yellowish brown (10YR 5/4) loamy sand; weak medium granular structure; very friable; common fine, medium and coarse roots; few 2 to 6 mm quartz pebbles; very strongly acid; gradual wavy boundary.

E2—18 to 25 inches; light brownish yellow (10YR 6/4) loamy sand; weak medium granular structure; very friable; common fine and medium roots; few 2 to 6 mm quartz pebbles; very strongly acid; clear smooth boundary.

BE—25 to 28 inches; brownish yellow (10YR 6/6) sandy loam; weak fine subangular blocky structure; very friable; common fine roots; sand grains coated with clay; few 2 to 6 mm quartz pebbles; very strongly acid; clear smooth boundary.

Bt1—28 to 45 inches; brownish yellow (10YR 6/8) fine sandy loam; few medium distinct strong brown (7.5YR 5/8) mottles and few fine prominent red (2.5YR 4/6) mottles; weak fine subangular blocky structure; friable; few fine roots; about 2 percent plinthite; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Bt2—45 to 56 inches; brownish yellow (10YR 6/8) sandy clay loam; common coarse prominent yellowish red (5YR 5/8) mottles surrounded by thin bands of strong brown (7.5YR 5/8) and few fine distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; about 3 percent plinthite; sand grains bridged and coated with clay; very strongly acid; gradual broken boundary.

Bt3—56 to 68 inches; strong brown (7.5YR 5/8) sandy clay loam; many coarse prominent red (2.5YR 4/8) mottles, common medium distinct strong brown (7.5YR 5/8) mottles, and light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; few mica flakes; extremely acid; gradual wavy boundary.

C—68 to 80 inches; reticulately mottled red (2.5YR 4/8), strong brown (7.5YR 5/8), and light gray (10YR 7/2) fine sandy loam; massive; very friable; very strongly acid.

The solum ranges in thickness from 60 to 80 inches. Reaction is strongly acid or very strongly acid except where lime has been added.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 0 to 4. It is 4 to 9 inches thick. Texture is loamy sand or loamy fine sand.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. It is 16 to 37 inches thick. Combined thickness of the A & E horizons is 20 to 40 inches. In many pedons, quartz pebbles 2 to 5 millimeters in diameter constitute up to 5 percent, by volume. Texture is loamy sand or loamy fine sand.

The BE horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 8. Texture is sandy loam or fine sandy loam. This horizon is up to 10 inches thick. Some pedons do not have a BE horizon.

The Bt horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 5 or 6, and chroma of 6 or 8. Texture is mainly sandy clay loam and ranges to sandy loam. Clay content is 18 to 35 percent, and silt content is less than 20 percent. Distinct mottles of yellowish red, red, strong brown, and pale brown are common. Mottles that have chroma of 2 or less are 40 to 60 inches below the surface and are discontinuous in many places. In some pedons, soft and hard plinthite can constitute up to 5 percent of the lower part of the Bt horizon. This horizon contains few to common mica flakes.

The C horizon is reticulately mottled in shades of yellow, brown, red, or gray. Texture ranges from sandy loam to clay.

Chipley Series

The Chipley series consists of deep, somewhat poorly drained, rapidly permeable soils. These soils formed in sandy marine sediment on nearly level to sloping uplands and on nearly level, low ridges on flatwoods. A seasonal high water table is between depths of 20 and 40 inches for 2 to 4 months during most years. Slope ranges from 0 to 8 percent. Soils of the Chipley series are thermic, coated Aquic Quartzipsamments.

Chipley soils are associated with the Blanton, Foxworth, Hurricane, Lakeland, Leon, Mandarin, Osier, Rutlege, and Troup soils. Blanton and Troup soils have a loamy subsoil. Foxworth and Lakeland soils are better drained than Chipley soils. Hurricane, Leon, and Mandarin soils have spodic horizons. Osier and Rutlege soils have a high water table closer to the surface.

Typical pedon of Chipley sand, 0 to 5 percent slopes; 1,250 feet north and 1,100 feet east of the southeast corner of sec. 27, T. 3 N., R. 21 W.

A—0 to 6 inches; dark gray (10YR 4/1) sand; organic matter and uncoated sand grains give a salt and pepper effect; weak medium granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

C1—6 to 16 inches; yellowish brown (10YR 5/4) sand; few medium pale brown (10YR 6/3) streaks; single grained; loose; many fine and few medium roots; common uncoated sand grains; strongly acid; gradual wavy boundary.

C2—16 to 31 inches; light yellowish brown (10YR 6/4) sand; few fine distinct strong brown (7.5YR 5/6) mottles along root channels; single grained; loose; few fine and coarse roots; common uncoated sand grains; strongly acid; gradual wavy boundary.

C3—31 to 45 inches; very pale brown (10YR 7/3) sand; many fine distinct strong brown (7.5YR 5/6) mottles with red (2.5YR 5/8) centers around root channels and common medium distinct light gray (10YR 7/2) mottles; single grained; loose; few fine and coarse roots; many uncoated sand grains; strongly acid; gradual wavy boundary.

Cg—45 to 80 inches; light gray (10YR 7/2) sand; common medium distinct strong brown (7.5YR 5/6) mottles along root channels; single grained; loose; sand grains uncoated; strongly acid.

Chipley soils are sand or fine sand to a depth of at least 80 inches. Silt plus clay content between depths of 10 and 40 inches is 5 to 10 percent. Reaction ranges from very strongly acid to medium acid throughout except where lime has been added.

The A or Ap horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. Where value is 3.5 or less, this horizon is less than 10 inches thick, but it generally ranges from 4 to 20 inches thick.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 6. The upper part of the C horizon generally has chroma of 3 to 6, and the lower part generally has chroma of 1 to 3. In some pedons, this horizon has hue of 7.5YR, value of 5, and chroma of 6 or 8, or hue of 2.5Y or 5Y, value of 6 to 8, and chroma of 2 or 3. Common to many gray mottles are at a depth of 30 to 40 inches, and in some pedons, few gray mottles are within 20 inches of the surface. Some pedons have a few streaks of gray to light gray uncoated sand grains along root channels in the upper part of the C horizon.

Corolla Series

The Corolla series consists of moderately well drained and somewhat poorly drained, very rapidly permeable soils. These soils formed in thick deposits of marine sands that have been reworked by wind and wave action. These gently sloping to sloping soils are on flat and gentle slopes between dunes and next to depressions and sloughs along the coast. A seasonal high water table is 18 to 36 inches below the surface 2 to 6 months annually and is 36 to 60 inches below the surface the rest of the year. Slope ranges from 2 to 6 percent. Soils of the Corolla series are thermic, uncoated Aquic Quartzipsamments.

Corolla soils are associated with Foxworth, Kureb, Lakeland, Mandarin, Newhan, and Resota soils. Foxworth and Lakeland soils have yellow substratum and Kureb and Resota soils have a yellow subsoil. Mandarin soils have a spodic horizon. Newhan soils are excessively drained.

Typical pedon of Corolla sand, from an area of Newhan-Corolla sands, rolling; 1,750 feet west and 950 feet south of the northeast corner of sec. 33, T. 2 S., R. 21 E.

A—0 to 8 inches; light gray (10YR 7/1) sand; single grained; loose; few fine roots; mixture of organic matter and uncoated sand grains; medium acid; gradual wavy boundary.

C1—8 to 33 inches; white (10YR 8/1) sand; single grained; loose; uncoated; few fine roots; neutral; gradual wavy boundary.

C2—33 to 42 inches; light gray (10YR 7/1) sand; few heavy black (10YR 2/1) ilmenite minerals; single grained; loose; uncoated; medium acid; gradual wavy boundary.

C3—42 to 57 inches; gray (10YR 6/1) sand; common very black (10YR 2/1) ilmenite minerals; single grained; loose; uncoated; medium acid; gradual wavy boundary.

Ab—57 to 67 inches; dark gray (10YR 4/1) sand; common heavy black (10YR 2/1) ilmenite minerals; common fine undecomposed very dark gray (10YR 3/1) plant material; single grained; loose; medium acid; gradual wavy boundary.

Cb—67 to 80 inches; gray (10YR 5/1) sand; few heavy black (10YR 2/1) ilmenite minerals; single grained; loose; medium acid.

Corolla soils are sand or fine sand to a depth of at least 80 inches. They are medium acid to mildly alkaline throughout. These soils contain few to common heavy black ilmenite minerals.

The A horizon has hue of 10YR to 2.5Y, value of 3 to 7, and chroma of 1 to 3; or it is neutral and has value of 3 to 7. It is 2 to 8 inches thick.

The C horizon has hue of 10YR to 2.5Y, value of 4 to 8, and chroma of 1 to 2; or it is neutral and has value of 4 to 8. In some pedons, this horizon has few mottles that have a high chroma. It has few to common heavy black ilmenite minerals.

The Ab horizon occurs at a depth of 24 to 72 inches and is similar in color to the A horizon. It contains few to common pieces of undecomposed plants.

The Cb horizon has hue of 10YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2; or it is neutral and has value of 4 to 7.

Cowarts Series

The Cowarts series consists of deep, well drained slowly permeable soils. These soils formed from sandy and loamy marine sediment on sloping to strongly sloping side slopes along creeks and drainageways on the Coastal Plain uplands. Slope ranges from 5 to 12 percent. Soils of the Cowarts series are fine-loamy, siliceous, thermic Typic Hapludults.

Cowarts soils are associated with Bonifay, Bonneau, Dothan, Fuquay, Kinston, Lakeland, Norfolk, Orangeburg, and Troup soils. Except for Kinston soils, the solum of all these soils is more than 60 inches thick. Kinston soils have variable, stratified horizons.

Typical pedon of Cowarts loamy sand, from an area of Troup-Orangeburg-Cowarts loamy sands, 5 to 12 percent slopes; in woodland, 1,550 feet north and 1,600 feet west of the southeast corner of sec. 26, T. 3 N., R. 20 W.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) loamy sand; weak medium crumb structure; very friable; strongly acid; clear wavy boundary.

Bt1—4 to 20 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; firm; many fine mica flakes; strongly acid; gradual wavy boundary

Bt2—20 to 38 inches; strong brown (7.5YR 5/6) sandy clay loam; subangular blocky structure; friable; weak medium common fine mica flakes; strongly acid; gradual wavy boundary.

BC—38 to 40 inches; yellowish brown (10YR 5/8) sandy loam; common medium distinct very pale brown (10YR 7/3) mottles and few fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; many mica flakes; strongly acid; gradual wavy boundary.

C—40 to 80 inches; yellowish brown (10YR 5/6) loamy sand; common medium distinct light gray (10YR 7/2), strong brown (7.5YR 5/6), and red (2.5YR 4/6) mottles and few fine distinct yellowish red (5YR 5/6) mottles; massive; very friable; few 2 to 5 mm quartz pebbles; few fine mica flakes; strongly acid.

The solum is variable in thickness but is dominantly 30 to 40 inches thick. The soil is strongly acid or very strongly acid throughout.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. It is 4 to 6 inches thick.

Some pedons have an E horizon. It has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. The E horizon is less than 10 inches thick.

Some pedons have a thin BE horizon. It has hue of 10YR, 7.5YR, or 2.5Y, value of 5, and chroma of 4 to 8. Texture is sandy loam, fine sandy loam, or sandy clay loam.

The Bt horizon has hue of 10YR to 5YR, value of 5 or 6, and chroma of 4 to 8. Texture is commonly sandy clay loam but ranges to sandy clay in the lower part of the horizon. Nodules of plinthite range up to 5 percent. The Bt horizon is 12 to 34 inches thick.

The BC horizon has colors similar to the Bt horizon, or it is reticulately mottled. it has mottles in shades of gray, red, and brown. Texture ranges from sandy loam to sandy clay. The BC horizon is up to 5 inches thick. Some pedons do not have a BC horizon.

The C horizon has hues of 10YR, 7.5YR, 5YR, or 2.5YR, value of 4 to 7, and chroma of 2 to 8. This horizon has mottles in shades of gray, brown, red, and yellow. Texture ranges from loamy sand to sandy clay. Pockets of material coarser or finer than the matrix are common.

Dirego Series

The Dirego series consists of deep, very poorly drained, moderately permeable soils that have sulfidic material. These soils formed in well decomposed and sapric material underlain by stratified sandy sediment. These soils are on broad, nearly level, tidal marshes that border the Choctawhatchee Bay. They are subject to frequent flooding by brackish water. Slope is less than 1 percent. Soils of the Dirego series are sandy or sandy-skeletal, siliceous, euic, thermic Terric Sulfihemists.

Dirego soils are associated with Maurepas soils. Maurepas soils do not have sulfidic material, and they have organic layers that are more than 51 inches thick.

Typical pedon of Dirego muck, frequently flooded; 2,400 feet west and 1,100 feet south of the northwest corner of sec. 14, T. 2 S., R. 19 W.

Oa1—0 to 8 inches; black (10YR 2/1) broken face and rubbed muck; less than 5 percent unrubbed and rubbed fiber; massive; sticky; squeezes easily between fingers; about 40 percent mineral content; 3.88 percent sulfur content; pale brown (10YR 6/3) sodium pyrophosphate; medium acid in natural state, extremely acid air dried; gradual wavy boundary.

Oa2—8 to 40 inches; black (N 2/0) broken face and rubbed muck; less than 5 percent unrubbed and rubbed fiber; massive; sticky; squeezes easily between fingers; about 47 percent mineral content; 5.4 percent sulfur content; light yellowish brown (10YR 6/4) sodium pyrophosphate; strongly acid in natural state, extremely acid air dried; gradual wavy boundary.

Oa3—40 to 48 inches; very dark gray (N 3/0) broken face and rubbed muck; less than 5 percent unrubbed and rubbed fiber; massive; sticky; squeezes easily between fingers; about 71 percent mineral content; 1.88 percent sulfur; light yellowish brown (10YR 6/4) sodium pyrophosphate; medium acid in natural state, extremely acid air dried; gradual wavy boundary.

Cg—48 to 65 inches; dark olive gray (5Y 3/2) fine sand; single grained; nonsticky; strongly acid in natural state, extremely acid air dried.

Sulfur content ranges from 0.75 to about 6.0 percent in subhorizons within a depth of 12 to 40 inches. Reaction ranges from strongly acid to slightly acid in water throughout profile in the natural state; after air drying, pH in 0.01M calcium cloride becomes less than 4.5. The organic layers are dominantly sapric and are 30 to less than 52 inches thick. Conductivity of the saturation extract of layers at a depth below about 6 inches ranges from 16 to 50 millimhos per centimeter.

The Oa horizon has hue of 10YR, 2.5Y, or 5Y, value of 2 or 3, and chroma of 1 or 2; or it is neutral and has value of 2 or 3. The fiber content is less than 5 percent unrubbed and rubbed. Mineral content in the Oa horizon ranges from 40 to 80 percent.

The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 2 to 5, and chroma of 1 or 2; or it is neutral and has value of 2 to 4. Texture is fine sand, sand, loamy fine sand, loamy sand, and their mucky analogs.

Dorovan Series

The Dorovan series consists of deep, very poorly drained, and moderately permeable soils. These soils formed from the decomposition of woody and herbaceous plants. They are on broad, nearly level flood plains of major streams and large hardwood swamps. Internal drainage is impeded by a high water table near the surface for most of the year. Slope is less than 1 percent. Soils of the Dorovan series are dysic, thermic Typic Medisaprists.

Dorovan soils are associated with Chipley, Kinston, Maurepas, Pamlico, and Rutlege soils. Chipley, Kinston, and Rutlege soils are mineral soils. Pamlico soils have a mineral horizon within a depth of 16 to 51 inches. Maurepas soils contain more silt and clay in the mineral fraction than Dorovan soils.

Typical pedon of Dorovan muck, in an area of Dorovan-Pamlico association, frequently flooded; in a swamp, 2,000 feet west and 50 feet south of the northeast corner of sec. 30, T. 3 N., R. 21 W.

Oa1—0 to 5 inches; black (10YR 2/1) muck that remains black when rubbed and pressed; less than 5 percent unrubbed and rubbed fiber; 26.3 percent mineral content; yellowish brown (10YR 5/4) sodium pyrophosphate extract; massive; nonsticky; many fine roots; extremely acid; clear wavy boundary.

Oa2—5 to 30 inches; black (10YR 2/1) muck that remains black when rubbed and pressed; less than 5 percent unrubbed and rubbed fiber; 19.6 mineral content; very dark brown (10YR 3/2) sodium pyrophosphate extract; massive; nonsticky; common fine roots; extremely acid; gradual wavy boundary.

Oa3—30 to 60 inches; black (10YR 2/1) muck that remains black when unrubbed and rubbed; less than 48.6 percent mineral content; dark brown (10YR 3/3) sodium pyrophosphate extract; massive; nonsticky; few fine roots; extremely acid.

The organic material is more than 51 inches thick. Reaction is less than 4.5 in 0.01M calcium chloride.

The Oa layer has hue of 10YR or 5YR, value of 2 or 3, and chroma of 1 or 2; or it is neutral and has value of 2 or 3. The unrubbed fiber content is generally less than 30 percent, and the rubbed fiber content is less than 10 percent. The mineral fraction contains less than 75 percent silt and clay.

Some pedons have a C horizon. It is sand of various shades of gray and brown.

Dothan Series

The Dothan series consists of deep, well drained, moderately slowly or slowly permeable soils. These soils formed in marine loamy sediment on nearly level to sloping uplands. A perched water table is at a depth of 36 to 60 inches after periods of heavy rainfall. Slope ranges from 0 to 8 percent. Soils of the Dothan series are fine-loamy, siliceous, thermic Plinthic Paleudults.

Dothan soils are associated with the Angie, Bibb, Bonifay, Escambia, Fuquay, Johnston, Kinston, Leefield, Lucy, Malbis, Orangeburg, Pantego, Stilson, Tifton, and Troup soils. Angie soils have more clay in the Bt horizon than Dothan soils. Bibb, Johnston, and Kinston soils have a high water table closer to the surface and are frequently flooded. Bonifay, Fuquay, Leefield, Lucy, Stilson, and Troup soils have a Bt horizon below a depth of 20 inches. Escambia and Malbis soils have more silt in the upper part of the Bt horizon and are wetter. Orangeburg soils have a redder Bt horizon and do not have plinthite. Pantego soils are very poorly drained and ponded. Tifton soils have more than 5 percent ironstones in the A and E horizons and the upper part of the Bt horizon.

Typical pedon of Dothan loamy sand, 2 to 5 percent slopes; 1,900 feet east and 1,300 feet south of the northwest corner of sec. 23, T. 4 N., R. 19 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand; moderate medium granular structure; very friable; common fine roots; very strongly acid; abrupt smooth boundary.

Bt1—8 to 11 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; sand grains coated with clay; very strongly acid; clear wavy boundary.

Bt2—11 to 36 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; extremely acid; gradual wavy boundary.

Btv1—36 to 44 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles with fine prominent red (2.5YR 4/6) centers; weak fine subangular blocky structure; about 10 percent plinthite; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

Btv2—44 to 60 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles with fine prominent red (2.5YR 4/6) centers; weak fine subangular blocky structure; about 10 percent plinthite; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

B't—60 to 80 inches; reticulately mottled brownish yellow (10YR 6/8), strong brown (7.5YR 5/8), light gray

(10YR 7/1), yellowish red (5YR 4/6), and red (10YR 4/6) sandy loam; weak medium subangular blocky structure; firm; extremely acid.

The solum ranges in thickness from 60 to more than 80 inches. Depth to horizons that contain more than 5 percent plinthite ranges from 24 to 60 inches. Content of ironstone pebbles is 0 to 5 percent, by volume, in the A and E horizons and the upper part of the Bt horizon. Reaction is strongly acid to extremely acid throughout except where lime has been added.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. It is 4 to 9 inches thick.

Some pedons have an E horizon. It has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. The E horizon is up to 10 inches thick. Texture is sandy loam, fine sandy loam, loamy sand, or loamy fine sand. Total thickness of the A and E horizons is less than 20 inches.

Some pedons have a BA horizon. It has hue of 10YR, value of 5 or 6, and chroma of 6 or 8. Texture is sandy loam or sandy clay loam. The BA horizon is up to 11 inches thick.

The Bt and Btv horizons have hue of 10YR, or 7.5YR, value of 5 or 6, and chroma of 6 or 8. They may have few to many mottles in shades of red, white, brown, and gray. The white or gray mottles are below a depth of 30 inches. Texture is sandy clay loam or sandy loam and ranges to include sandy clay in the lower part of the Btv horizon. The upper 20 inches of the Bt horizon contains about 18 to 35 percent clay and less than 20 percent silt. The Btv horizon contains 5 to 35 percent, by volume, of nonundurated plinthite.

The B't horizon is reticulately mottled in hue of 10YR, 7.5YR, or 5YR, value of 4 to 7, and chroma of 1 to 8. Texture is sandy loam, sandy clay loam, or sandy clay. The gray mottles are commonly more clayey than the brown, red, and yellow mottles.

Duckston Series

The Duckston series consists of deep, very poorly drained, very rapidly permeable soils. These soils formed in sandy sediment in nearly level marshes bordering the Choctawhatchee Bay. The high water table is at a depth of less than 10 to 20 inches most of the year, and flooding by salt water is frequent. Slope ranges from 0 to 2 percent. Soils of the Duckston series are siliceous, thermic Typic Psammaquents.

Duckston soils are associated with the Dirego, Leon, and Rutlege soils. Dirego soils have an organic (muck) surface layer more than 16 inches thick. Leon and Rutlege soils are not subject to common flooding by salt water. Leon soils have a spodic horizon, and Rutlege soils have an umbric epipedon.

Typical pedon of Duckston muck, frequently flooded; 2,000 feet west and 1,650 feet south of the northwest corner of sec. 16, T. 2 S., R. 20 W.

Oa—4 inches to 0; black (10YR 2/1) muck; less than 5 percent fiber; massive; very friable; many fine roots; moderately alkaline; clear wavy boundary.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) sand; weak medium granular structure; very friable; common fine roots; moderately alkaline; gradual wavy boundary.

A2—6 to 12 inches; dark gray (10YR 4/1) sand; weak medium granular structure; very friable; few fine roots; moderately alkaline; gradual wavy boundary.

A3—12 to 21 inches; dark gray (N 4/0) sand; weak medium granular structure; very friable; moderately alkaline; gradual wavy boundary.

Cg1—21 to 30 inches; gray (10YR 5/1) sand; common medium distinct light gray (10YR 7/2) and brownish yellow (10YR 6/8) mottles; single grained; loose; moderately alkaline; gradual wavy boundary.

Cg2—30 to 50 inches; light brownish gray (2.5Y 6/2) sand; few fine faint pale yellow mottles and few fine distinct dark gray (10YR 4/1) mottles; single grained; loose; moderately alkaline; gradual wavy boundary.

Cg3—50 to 60 inches; gray (10YR 5/1) sand; single grained; loose; moderately alkaline; gradual wavy boundary.

Cg4—60 to 80 inches; light gray (10YR 6/1) sand; single grained; loose; moderately alkaline.

Duckston soils are sand or fine sand to a depth of at least 80 inches. Reaction ranges from medium acid to moderately alkaline throughout. In places, the soil contains a few black heavy minerals. Some pedons exhibit a slight sulfur odor below the surface horizon. Sulfur content is less than 0.7 percent.

The Oa horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Fiber content is less than 5 percent. The Oa horizon is mostly 3 to 8 inches thick. Some pedons do not have an Oa horizon.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2, or hue of 2.5Y, value of 2 to 4, and chroma of 2, or it is neutral and has value of 2 to 4. It is 9 to 34 inches thick.

The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 1 or 2; or it is neutral and has value of 5 to 7. In most pedons, this horizon has few to common, fine to medium, brown or dark grayish brown stains or mottles. Salinity varies depending upon the amount of time that has past since the area was flooded by salt water.

Eglin Series

The Eglin series consists of deep, somewhat excessively drained, moderately and moderately rapidly permeable soils. These soils formed in thick sandy marine sediment on low, broad, nearly level and gently sloping uplands. They are saturated below a depth of about 72 inches in winter and early in spring and at a depth of 60 to 80 inches for brief periods after heavy rainfall. Slope ranges from 0 to 5 percent. Soils of the Eglin series are sandy, siliceous, thermic Grossarenic Entic Haplohumods.

Eglin soils are associated with the Blanton, Chipley, Foxworth, Hurricane, and Lakeland soils. Blanton soils have a Bt horizon. Chipley, Foxworth, and Lakeland soils do not have a Bh horizon. Hurricane soils have a high water table within a depth of 6 feet.

Typical pedon of Eglin sand, 0 to 5 percent slopes; 2,100 feet south and 500 feet east of the northwest corner of sec. 23, T. 1 N., R. 19 W.

A—0 to 2 inches; dark grayish brown (10YR 4/2) rubbed sand; weak medium granular structure; very friable; many fine and common medium roots; very strongly acid; abrupt wavy boundary.

E1—2 to 5 inches; yellowish brown (10YR 5/4) sand; common medium faint brown (10YR 5/3) streaks; weak medium granular structure; very friable; common fine and medium roots and few coarse roots; very strongly acid; clear smooth boundary.

E2—5 to 62 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; few fine and coarse roots and common medium roots; very strongly acid; gradual wavy boundary.

E3—62 to 68 inches; yellowish brown (10YR 5/4) sand; weak medium granular structure; very friable; very strongly acid; clear wavy boundary.

Bh1—68 to 75 inches; dark brown (7.5YR 3/2) sand; massive; very friable; sand grains coated with colloidal organic matter; very strongly acid; clear wavy boundary.

Bh2—75 to 80 inches; dark reddish brown (5YR 2/2) sand; massive; very friable; sand grains well coated with colloidal organic matter; very strongly acid.

The solum is more than 70 inches thick. Texture is sand or fine sand. Reaction is very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3, or hue of 2.5Y, value of 5 to 8, and chroma of 4. It is 2 to 6 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8, or hue of 2.5Y, value of 5 to 8 and chroma of 4. In some pedons, this horizon has few to common, yellow, brown, or strong brown mottles and few to many uncoated sand grains. The E horizon is 50 to 75 inches thick. Texture is sand or fine sand.

Some pedons have a BE horizon. It has hue of 10YR or 7.5YR, value of 4, and chroma of 2 to 4. Sand grains are coated with organic matter; however, the horizon does not meet the requirements of a spodic horizon. The BE horizon is up to 10 inches thick.

The Bh horizon has hue of 10YR, value of 2 or 3, and chroma of 1 to 3, hue of 7.5YR, value of 3, and chroma of 2, or hue of 5YR, value of 2 or 3, and chroma of 1 to 3. Sand grains are well coated with colloidal organic matter.

Escambia Series

The Escambia series consists of somewhat poorly drained, slowly to moderately permeable soils. These soils formed in sandy and loamy sediment on nearly level to gently sloping uplands. A high water table is within a depth of 18 to 30 inches for 1 to 4 months during most years. Slope ranges from 0 to 5 percent. Soils of the Escambia series are coarse-loamy, siliceous thermic Plinthaquic Paleudults.

Escambia soils are associated with the Fuquay, Leefield, Malbis, Pantego, and Stilson soils. Fuquay, Malbis, and Stilson soils are better drained than the Escambia soils. Leefield soils have a Bt horizon 20 to 40 inches below the soil surface. Pantego soils are very poorly drained.

Typical pedon of Escambia sandy loam, 2 to 5 percent slopes; 1,900 feet west and 750 feet north of the southeast corner of sec. 7, T. 5 N., R. 20 W.

Ap—0 to 6 inches; very dark gray (10YR 3/1) sandy loam; moderate medium granular structure; very friable; many fine roots; extremely acid; clear smooth boundary.

A—6 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam; weak medium granular structure; very friable; common fine roots; extremely acid; clear smooth boundary.

AB—9 to 12 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; few fine roots; extremely acid; clear smooth boundary.

BA—12 to 17 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable; few fine roots; sand grains coated with clay; extremely acid; gradual wavy boundary.

Bt—17 to 23 inches; brownish yellow (10YR 6/6) sandy loam; few fine prominent yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btv1—23 to 29 inches; brownish yellow (10YR 6/6) sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles with red (2.5YR 4/6) centers; moderate fine subangular blocky structure; friable; few fine roots; about 9 percent plinthite; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btv2—29 to 39 inches; brownish yellow (10YR 6/6) sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles with red (2.5YR 4/6) centers, common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; about 12 percent plinthite; sand grains bridged and coated with clay; extremely acid; clear wavy boundary.

B't—39 to 67 inches; brownish yellow (10YR 6/6) sandy loam; many coarse prominent red (2.5YR 4/8) mottles, common medium distinct light gray (10YR 7/1) mottles, and few fine distinct pink (5YR 7/4) mottles; common medium distinct light brownish gray (10YR 6/2) vertical and horizontal streaks about 1/2 inch thick; moderate medium subangular blocky structure; friable; extremely acid; clear wavy boundary.

2C1—67 to 73 inches; reticulately mottled light gray (10YR 7/1), red (2.5YR 4/8), and pale yellow (2.5Y 7/4) loam; massive; firm; very strongly acid; gradual wavy boundary.

2C2—73 to 80 inches; light gray (10YR 7/1) loam; common medium distinct red (2.5YR 4/8) mottles, few medium distinct pale yellow (2.5Y 7/4) mottles, and few fine distinct pink (5YR 7/4) and strong brown (7.5YR 5/8) mottles; massive; firm; extremely acid.

The solum ranges in thickness from 60 to more than 80 inches. Depth to horizons containing 5 to 30 percent plinthite ranges from 30 to 42 inches. Reaction ranges from strongly acid to extremely acid except where lime has been added.

The A or Ap horizon has hue of 10YR, value of 3 to 4, and chroma of 1 or 2; or it is neutral and has value of 3 or 4. This horizon is 4 to 9 inches thick.

The AB horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. Texture is sandy loam or fine sandy loam. The AB horizon is up to 10 inches thick. Combined thickness of the A and AB horizon is less than 20 inches. Some pedons do not have an AB horizon.

The BA horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 6. Mottles in shades of yellow, pale brown, and light gray are none to common. Texture is sandy loam or fine sandy loam. The BA horizon is 3 to 9 inches thick.

The Bt, Btv, and B't horizons have hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 7. Few to common mottles are in shades of red, yellow, and brown. Gray mottles of chroma 2 or less are within a depth of 30 inches. The Bt, Btv, and B't horizons average sandy loam in texture, but some pedons have thin Bt or Btv horizons of loam, sandy clay loam, or sandy clay. The upper 20 inches of the argillic horizon contain less than 18 percent clay and more than 20 percent silt. The Bt, Btv, and B't horizons are 22 to 63 inches thick.

The C horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2; or it is reticulately mottled in shades of gray, red, yellow, and brown. The gray part of the C horizon is commonly more clayey than the brown, red, and yellow parts. Texture is fine sandy loam, sandy loam, loam, or sandy clay loam.

Florala Series

The Florala series consists of somewhat poorly drained, slowly to moderately permeable soils. These soils formed in sandy and loamy sediment on nearly level to gently sloping uplands. A high water table is within a depth of 18 to 30 inches for 1 to 4 months during most years. Slope ranges from 0 to 5 percent. Soils of the Florala series are coarse-loamy, siliceous, thermic Plinthaquic Paleudults.

Florala soils are associated with the Dothan, Fuquay, Leefield, Pantego, and Stilson soils. Dothan, Fuquay, and Stilson soils are better drained than Florala soils, and Pantego soils are very poorly drained. Leefield soils have a Bt horizon 20 to 40 inches below the surface.

Typical pedon of Florala loamy fine sand, 2 to 5 percent slopes; 850 feet east and 450 feet north of the southwest corner of sec. 2, T. 5 N., R. 19 W.

A—0 to 8 inches; very dark gray (10YR 3/1) loamy fine sand; moderate medium granular structure; very friable; many fine, common medium, and few coarse roots; very strongly acid; clear smooth boundary.

E—8 to 12 inches; yellowish brown (10YR 5/4) loamy fine sand; common medium distinct brownish yellow (10YR 6/6) mottles; weak medium granular structure; very friable; common fine and few medium roots; very strongly acid; clear wavy boundary.

EB—12 to 17 inches; brownish yellow (10YR 6/6) loamy sand; weak medium granular structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

Bt1—17 to 24 inches; brownish yellow (10YR 6/6) fine sandy loam; weak subangular blocky structure; very friable; few fine roots; sand grains coated with clay; strongly acid; gradual wavy boundary.

Bt2—24 to 28 inches; brownish yellow (10YR 6/6) fine sandy loam; common medium distinct light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/8) mottles, and few fine distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; very friable; 2 percent plinthite; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btv—28 to 39 inches; light yellowish brown (10YR 6/4) fine sandy loam; many common distinct light brownish gray (10YR 6/2), strong brown (7.5YR 5/8), and distinct yellowish brown (10YR 5/8) mottles, and few medium distinct yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; friable; 10 percent plinthite; sand grains bridged and coated with clay; strongly acid; clear wavy boundary.

B't1—39 to 64 inches; reticulately mottled light brownish yellow (10YR 6/2), brownish yellow (10YR 6/6), strong brown (7.5YR 5/8), and light reddish brown (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

B't2—64 to 80 inches; reticulately mottled light brownish gray (10YR 6/2) brownish yellow (10YR 6/8), strong brown (7.5YR 5/8), and red (2.5YR 4/6) fine sandy loam; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid.

The solum is more than 60 inches thick. Depth to a horizon with 5 percent or more plinthite ranges from 20 to 42 inches. Reaction is very strongly acid or strongly acid throughout except where lime has been added.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2; or it is neutral and has value of 3 or 4. This horizon is less than 10 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. Texture is fine sandy loam, sandy loam, or loamy fine sand. This horizon is less than 10 inches thick. Some pedons do not have an E horizon.

The Bt and Btv horizons have hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 6. Mottles are in shades of red, brown, gray, or yellow. The B't horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 4, or it may not have a matrix color but can be mottled in shades of brown, yellow, red, and gray. Mottles of chroma of 2 or less are within 30 inches of the surface. Texture of the Bt and Btv horizons is sandy loam or fine sandy loam. Texture of the B't horizon is sandy clay loam, sandy loam, or fine sandy loam. The upper 20 inches of the argillic horizon has less than 20 percent silt. Plinthite ranges from 5 to about 20 percent, by volume, in the Btv horizon.

Foxworth Series

The Foxworth series consists of deep, moderately well drained, very rapidly permeable soils. These soils formed in thick deposits of sandy marine or aeolian sediments on broad, nearly level and gently sloping uplands. They are saturated below a depth of about 40 inches in winter and early in spring. Slope ranges from 0 to 5 percent. Soils of the Foxworth series are thermic, coated Typic Quartzipsamments.

Foxworth soils are associated with the Albany, Blanton, Chipley, Dorovan, Hurricane, Kureb, Lakeland, Leon, Mandarin, Pamlico, Resota, and Troup soils. Albany, Blanton, and Troup soils have an A horizon 40 to 79 inches thick over an argillic horizon. Chipley soils have a high water table closer to the surface than that of the Foxworth soils. Dorovan and Pamlico soils are very poorly drained and are organic. Hurricane, Mandarin, and Leon soils have spodic horizons. Kureb and Lakeland soils are excessively drained. Resota soils have a B horizon.

Typical pedon of Foxworth sand, 0 to 5 percent slopes; 1,400 feet north and 1,000 feet west of the southeast corner of sec. 1, T. 3 S., R. 20 W.

A1—0 to 3 inches; grayish brown (10YR 5/2) sand; mixture of organic matter and uncoated sand grains; weak medium granular structure; very friable; many fine and coarse roots; neutral; clear wavy boundary.

A2—3 to 7 inches; brown (10YR 5/3) sand; single grained; loose; many fine, medium, and coarse roots; common uncoated sand grains; strongly acid; gradual wavy boundary.

C1—7 to 18 inches; yellowish brown (10YR 5/4) sand; single grained; loose; common fine, medium, and coarse roots; common uncoated sand grains; strongly acid; gradual wavy boundary.

C2—18 to 33 inches; brownish yellow (10YR 6/6) sand; single grained; loose; common fine roots; few uncoated sand grains; strongly acid; gradual wavy boundary.

C3—33 to 44 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine roots; few uncoated sand grains; medium acid; gradual wavy boundary.

C4—44 to 54 inches; yellow (10YR 7/6) sand; common medium distinct brownish yellow (10YR 6/6) mottles and common medium distinct white (10YR 8/1) mottles; single grained; loose; common uncoated sand grains; medium acid; gradual wavy boundary.

C5—54 to 69 inches; very pale brown (10YR 7/4) sand; common medium distinct white (10YR 8/1) mottles; single grained; loose; many uncoated sand grains; medium acid; gradual wavy boundary.

C6—69 to 80 inches; light gray (10YR 7/2) sand; common medium faint very pale brown (10YR 7/4) streaks; single grained; loose; uncoated sand grains; strongly acid.

The Foxworth soils are sand to a depth of at least 80 inches. Reaction ranges from very strongly acid to medium acid throughout except where lime has been added. Silt plus clay content in the 10- to 40-inch control section is 5 to 10 percent.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is generally 3 to 15 inches thick, but where value is 3.5 or less, it is less than 6 inches thick.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 6. Generally, the upper part of the C horizon has chroma of 4 to 6, and the lower part has chroma of 1 to 3. In some pedons, the upper part of this horizon has few to common, fine to large masses of uncoated sand grains, but they are not indicative of wetness. In some pedons, the lower part has few to common, fine or medium, strong brown or yellowish red segregated iron mottles. Depth to mottles is commonly 45 to 60 inches, but ranges from 40 to 70 inches. Few to many uncoated sand grains are in the lower part of this horizon.

Fuquay Series

The Fuquay series consists of deep, well drained, slowly permeable soils. These soils formed in sandy and loamy marine sediment on broad, nearly level to sloping ridges and long side slopes on uplands. They are droughty in summer. Slope ranges from 0 to 8 percent. Soils of the Fuquay series are loamy, siliceous, thermic Arenic Plinthic Paleudults.

Fuquay soils are associated with the Albany, Blanton, Bonifay, Bonneau, Dothan, Escambia, Leefield, Lucy, Malbis, Norfolk, Orangeburg, Pantego, Stilson, Tifton, and Troup soils. Albany, Blanton, Bonifay, and Troup soils have a Bt horizon below a depth of 40 inches. Bonneau, Dothan, Malbis, Norfolk, Orangeburg, and Tifton soils have a Bt horizon within a depth of 20 inches. Escambia, Leefield, Pantego, and Stilson soils have a high water table closer to the surface than Fuquay soils. Pantego soils are also ponded. Lucy soils have a redder Bt horizon and do not have plinthite.

Typical pedon of Fuquay loamy sand, 0 to 5 percent slopes; 2,250 feet east and 650 feet north of the southwest corner of sec. 30, T. 6 N., R. 20 W.

A—0 to 5 inches; dark grayish brown (10YR 4/2) loamy sand; moderate medium granular structure; very friable; many fine and common medium roots; strongly acid; clear smooth boundary.

E1—5 to 12 inches; yellowish brown (10YR 5/4) loamy sand; weak medium granular structure; very friable; common fine and medium roots and few coarse roots; strongly acid; gradual wavy boundary.

E2—12 to 26 inches; yellowish brown (10YR 5/6) loamy sand; weak medium granular structure; very friable; common fine and medium roots and few coarse roots; strongly acid; gradual wavy boundary.

Bt1—26 to 35 inches; yellowish brown (10YR 5/6) sandy loam; weak medium granular structure; very friable; less than 5 percent, by volume, ironstone pebbles; common fine and medium roots; strongly acid; gradual wavy boundary.

Bt2—35 to 53 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; few fine roots; very strongly acid; gradual wavy boundary.

Btv—53 to 61 inches; yellowish brown (10YR 5/8) sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles, common medium prominent red (2.5YR 4/8) mottles, and few fine distinct very pale brown (10YR 7/3) mottles; moderate medium subangular blocky structure; friable; about 8 percent, by volume, firm brittle plinthite nodules; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

B't—61 to 74 inches; brownish yellow (10YR 6/8) sandy loam; common medium distinct strong brown (7.5YR 5/8) and yellowish red (5YR 5/8) mottles, and common medium prominent red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

C—74 to 80 inches; red (2.5YR 4/8) coarse sandy loam; common medium distinct strong brown (7.5YR 5/8) and light red (2.5YR 6/6) mottles, common medium prominent brownish yellow (10YR 6/8) mottles, and few fine distinct light gray (10YR 7/1) mottles; massive; firm and compact; very strongly acid.

The solum is more than 70 inches thick. Depth to plinthite ranges from 45 to 60 inches. Silt content is less than 20 percent throughout. Reaction is very strongly acid or strongly acid throughout except where lime has been added. Typically, a few rounded, rough or smooth nodules of iron are on the surface, throughout the A horizon, and in the upper part of the Bt horizon.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3, or hue of 2.5Y, value of 4 or 5, and chroma of 2. It is 4 to 10 inches thick.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6, or hue of 2.5YR, value of 5, and chroma of 4 or 6. Clean sand grains are light gray. The E horizon is 16 to 30 inches thick. Combined thickness of the A and E horizons ranges from 20 to 40 inches.

The Bt, Btv, and B't horizons have hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 to 8. Mottles are in shades of red, yellow, and brown. Mottles that have chroma of 2 or less are below a depth of 40 inches. Texture is sandy loam or sandy clay loam. The plinthite nodules are hard, have reddish interior colors, and are surrounded by strong brown and yellowish brown, soft material. Clay films occur as patches or thin continuous coatings. Soft to hard, rough to smooth-surfaced, nodules of iron increase with depth from the upper part of the Bt horizon until they merge into a zone of discontinuous plinthite in the Btv horizon. Generally, the redder parts of the plinthic material are oriented horizontally. Plinthite ranges from 5 to 20 percent in the Btv horizon.

The C horizon is sandy loam, coarse sandy loam, loamy sand, or sandy clay loam and has variegated mottles of red, brown, yellow, and gray.

Garcon Series

The Garcon series consists of deep, somewhat poorly drained, moderately permeable soils on stream terraces. These soils formed in sandy and loamy fluvial sediment. In most years, a high water table is 18 to 36 inches more than the surface for 4 to 6 months and more than 40 inches below the surface for the rest of the year. Garcon soils are subject to flooding. Slope ranges from 0 to 5 percent. Soils of the Garcon series are loamy, siliceous, thermic Arenic Hapludults.

Garcon soils are associated with the Bibb, Bigbee, Johnston, Kinston, Rutlege, and Yemassee soils. Bibb, Johnston, Kinston, and Rutlege soils are wetter than Garcon soils. The Bigbee soils are sandy throughout. The combined thickness of the Yemassee soils is less than 20 inches.

Typical pedon of Garcon loamy fine sand, occasionally flooded; 1,000 feet south and 450 feet east of the northwest corner of sec. 26, T. 1 N., R. 17 W.

A1—0 to 3 inches; very dark gray (10YR 3/1) loamy fine sand; moderate medium granular structure; friable; many fine roots; very strongly acid; gradual wavy boundary.

A2—3 to 6 inches; dark grayish brown (10YR 4/2) loamy fine sand; common medium distinct very dark gray (10YR 3/1) mottles along root channels; moderate medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

E1—6 to 11 inches; yellowish brown (10YR 5/4) loamy fine sand; weak medium granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

E2—11 to 25 inches; brownish yellow (10YR 6/6) loamy fine sand; common medium distinct grayish brown (10YR 5/2) mottles; weak medium granular structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

Bt1—25 to 28 inches; brownish yellow (10YR 6/6) fine sandy loam; few fine distinct strong brown (7.5YR 5/8) and light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

Bt2—28 to 46 inches; light yellowish brown (10YR 6/4) fine sandy loam; many coarse distinct light gray (10YR 7/2), strong brown (7.5YR 5/8), and reddish yellow mottles; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

BC—46 to 49 inches; light gray (10YR 7/2) loamy fine sand; common medium prominent reddish yellow (5YR 5/8) mottles; weak medium subangular blocky structure; very friable; very strongly acid; abrupt wavy boundary.

C—49 to 80 inches; white (10YR 8/1) fine sand; few fine prominent reddish yellow (5YR 5/8) and strong brown (7.5YR 5/8) mottles and common medium distinct brownish yellow (10YR 6/8) and very pale brown (10YR 7/4) mottles; single grained; loose; very strongly acid.

The solum is 40 to 60 inches thick. Reaction is very strongly acid or strongly acid throughout.

The A horizon has hue of 10YR, value of 2 to 4, chroma of 1 or 2. It is 2 to 8 inches thick. Texture is loamy fine sand or loamy sand.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6; or it has hue of 2.5Y, value of 6, and chroma of 4. Mottles in shades of brown, yellow, and gray are present in the lower part of the E horizon. Texture is loamy fine sand or loamy sand. The E horizon is 5 to 15 inches thick. Combined thickness of the A and E horizon is 20 to 40 inches.

The upper part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. Fine to coarse mottles are in shades of gray, brown, or yellow. Texture is sandy loam or fine sandy loam. This part of the Bt horizon is 5 to 20 inches thick.

In some pedons, the lower part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 4. Fine to coarse mottles in shades of gray, brown, yellow, or red. The silt content is less than 20 percent. Texture is sandy loam, fine sandy loam, or sandy clay loam. Weighted average clay content in the upper 20 inches of the argillic horizon is less than 18 percent. This part of the Bt horizon is up to 15 inches thick.

The BC horizon has the same color range as the lower part of the Bt horizon. Texture is loamy sand or loamy fine sand. The BC horizon is up to 10 inches thick. Some pedons do not have a BC horizon.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. Fine and medium mottles are in shades of gray, yellow, and brown. Texture is sand or fine sand. Some pedons contain some flakes of mica.

Hurricane Series

The Hurricane series consists of somewhat poorly drained, moderately rapid to very rapidly permeable soils. These soils formed in thick beds of sandy marine sediment in nearly level to gently sloping, slightly elevated areas on flatwoods (fig. 17). A high water table fluctuates between depths of 20 and 40 inches for 3 to 6 months during most years and is below a depth of 40 inches for the rest of the year. Slope ranges from 0 to 5 percent. Soils of the Hurricane series are sandy, siliceous, thermic Grossarenic Entic Haplohumods.

Hurricane soils are associated with the Chipley, Eglin, Foxworth, Leon, Mandarin, and Rutlege soils. Chipley, Foxworth, and Rutlege soils do not have spodic horizons, and Leon and Mandarin soils have spodic horizons within a depth of 30 inches. Eglin soils are better drained than Hurricane soils.

Typical pedon of Hurricane sand, 0 to 5 percent slopes; 2,300 feet east and 1,800 feet north of the southwest corner of sec. 32, T. 2 S., R. 19 W.

A—0 to 5 inches; very dark gray (10YR 3/1) sand; weak medium granular structure; very friable; many fine and medium roots; mixture of uncoated sand grains

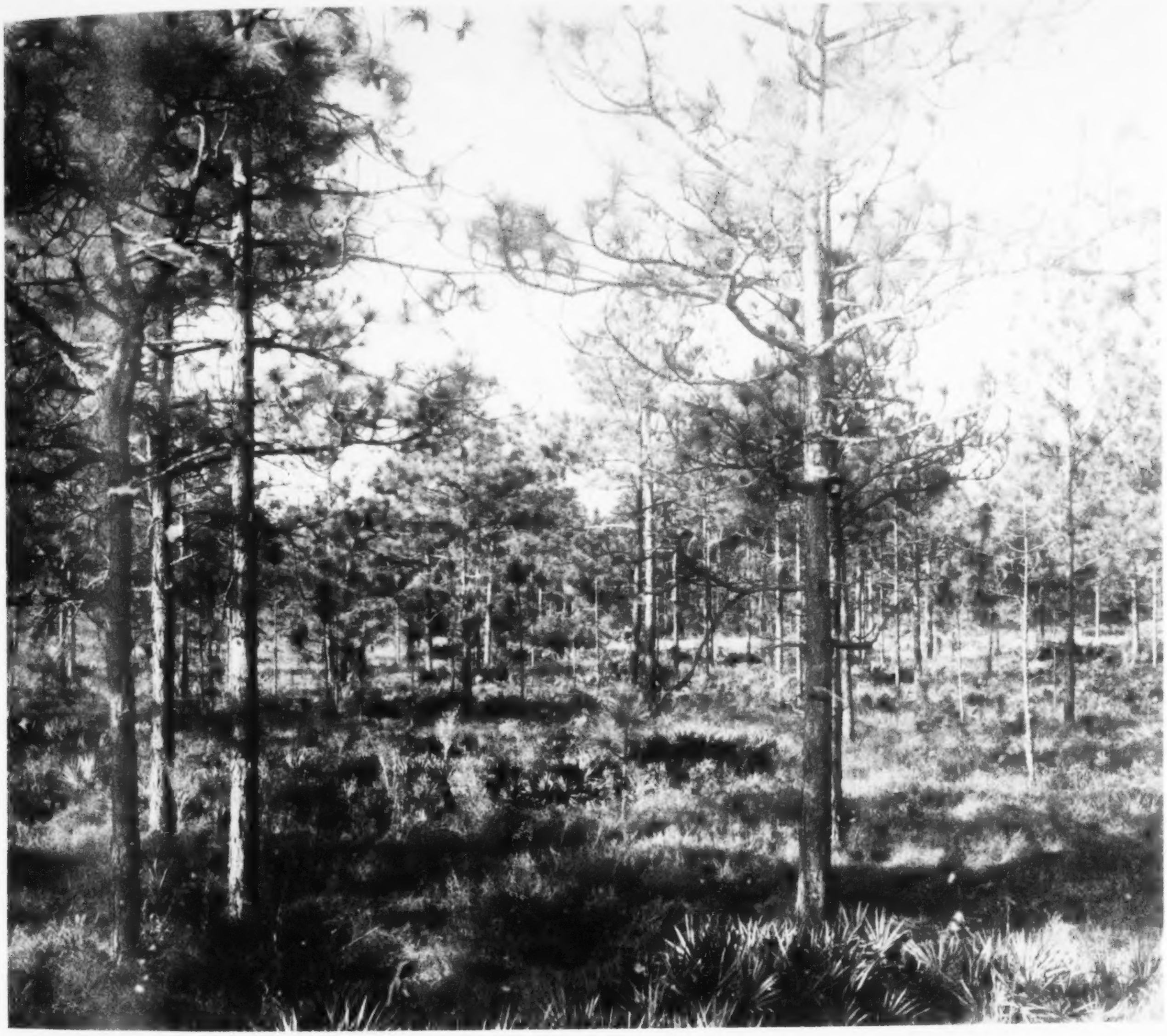

Figure 17.—Hurricane sand, 0 to 5 percent slopes, is in elevated areas of the flatwoods. Typical vegetation on this soil is sawpalmetto, pineland threeawn, gallberry, and scattered pine.

and organic matter; extremely acid; clear smooth boundary.

E1—5 to 14 inches; brown (10YR 5/3) sand; single grained; loose; many fine medium and coarse roots; common uncoated sand grains; very strongly acid; gradual wavy boundary.

E2—14 to 22 inches; yellowish brown (10YR 5/4) sand; common medium distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/8) mottles; single grained; loose; common fine and medium roots; few uncoated sand grains; very strongly acid; gradual wavy boundary.

E3—22 to 31 inches; brownish yellow (10YR 6/6) sand; common medium distinct light brownish gray (10YR 6/2) mottles and few fine distinct strong brown (7.5YR 5/8) mottles; single grained; loose; common fine and medium roots; few uncoated sand grains; very strongly acid; clear wavy boundary.

E4—31 to 47 inches; brownish yellow (10YR 6/8) sand; common medium distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/8) mottles; single grained; loose; few fine and medium roots; few uncoated sand grains; extremely acid; clear wavy boundary.

E5—47 to 63 inches; white (10YR 8/1) sand; single grained; loose; many uncoated sand grains; very strongly acid; abrupt smooth boundary.

Bh—63 to 80 inches; black (5YR 2/1) sand; massive; very friable; sand grains coated with organic matter; extremely acid.

The solum is 60 to more than 80 inches thick. Depth to the Bh horizon is 51 to 79 inches. Low chroma mottles are below a depth of 20 inches in some pedons. Reaction ranges from extremely acid to strongly acid.

The Ap or A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 3. Texture is sand or fine sand.

The upper part of the E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. Mottles in shades of yellow, brown, or gray are common. The lower part of the E horizon, immediately above the Bh horizon, has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. Texture of the E horizon is fine sand or sand.

The Bh horizon has hue of 5YR, 7.5YR, or 10YR, value of 2 to 5, and chroma of 1 to 4. Sand grains are well coated with organic matter. Texture is fine sand, sand, loamy fine sand, or loamy sand.

Some pedons have a C horizon. It has hue of 10YR, value of 4 to 7, and chroma of 1 to 6. Mottles in shades of yellow, brown, or gray are in some pedons.

Johnston Series

The Johnston series consists of deep, very poorly drained, moderately rapidly permeable soils. These soils formed from highly variable sandy and loamy fluvial sediment on nearly level flood plains of creeks and streams in the Coastal Plain. They are saturated in winter and early in spring. Slope ranges from 0 to 2 percent; short, steep slopes are up to 3 feet high in old stream channels resulting from stream meander. Soils of the Johnston series are coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts.

Johnston soils formed from and are associated with all the soils of the Coastal Plain. The more dominant soils are Albany, Bibb, Bonifay, Chipley, Dothan, Fuquay, Kinston, and Troup soils. Albany, Bonifay, Chipley, Dothan, Fuquay, and Troup soils are on uplands and are better drained than Johnston soils. Bibb and Kinston soils are on flood plains and are slightly better drained.

Typical pedon of Johnston loam, from an area of Kinston-Johnston-Bibb complex, frequently flooded; 2,100 feet south and 600 feet west of the northeast corner of sec. 36, T. 4 N., R. 20 W.

A—0 to 37 inches; very dark gray (10YR 3/1) mucky loam; weak medium granular structure; very friable; many fine and common medium roots; strongly acid; clear wavy boundary.

Cg—37 to 65 inches; light brownish gray (10YR 6/2) sand; common medium faint pale brown (10YR 6/3) mottles and few fine distinct very dark gray (10YR 3/1) loam along old root channels; single grained; loose; few strata of loamy sand; strongly acid.

The Johnston soils are very strongly or strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR to 5Y, value of 2 or 3, and chroma of 1 or 2, or it is neutral and has value of 2 or 3. This horizon is 24 to 48 inches thick. The organic matter content is 8 to 18 percent. Some pedons have a few inches of recent alluvial sediment deposited on the dark A horizon.

Some pedons have an AC horizon. It has hue of 10YR or 2.5Y, value of 4, and chroma of 1 or 2. Texture is loam, fine sandy loam, loamy sand, or loamy fine sand. The AC horizon is up to 8 inches thick.

The 2Cg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. Texture is generally fine sandy loam, sandy loam, loamy sand, or sand, but it can be sandy clay loam. In some pedons, it is individual strata ranging from sandy clay loam to sand.

Kenansville Series

The Kenansville series consists of deep, well drained, moderately rapidly permeable soils. These soils formed in sandy and loamy marine sediment on broad, nearly level to sloping stream terraces, generally on the smoother parts of the landscape between the higher, sandier ridges and the lower, wet areas. Slope ranges from 0 to 5 percent. Soils of the Kenansville series are loamy, siliceous, thermic Arenic Hapludults.

Kenansville soils are associated with the Bigbee, Bonneau, Garcon, Troup, and Yemassee soils. Bigbee soils are excessively drained and sandy throughout. Bonneau soils have a thicker solum than that of the Kenansville soils. Garcon and Yemassee soils have a higher seasonal high water table. The subsoil of the Troup soils is below a depth of 40 inches.

Typical pedon of Kenansville loamy fine sand, 0 to 5 percent slopes; 2,200 feet east and 2,050 feet north of the southwest corner of sec. 24, T. 1 N., R. 17 W.

A—0 to 10 inches; grayish brown (10YR 5/2) loamy fine sand; moderate medium granular structure; very friable; many fine and medium roots and common coarse roots; very strongly acid; clear smooth boundary.

E1—10 to 18 inches; light yellowish brown (10YR 6/4) loamy fine sand; weak medium granular structure; very friable; common fine and few medium and coarse roots; very strongly acid; gradual wavy boundary.

E2—18 to 31 inches; light yellowish brown (10YR 6/4) loamy fine sand; common medium distinct light gray (10YR 7/2) clean sand grains; weak medium granular structure; very friable; common fine and medium roots; very strongly acid; gradual wavy boundary.

Bt1—31 to 41 inches; brownish yellow (10YR 6/6) fine sandy loam; weak moderate subangular structure; friable; common fine and few medium roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Bt2—41 to 53 inches; brownish yellow (10YR 6/6) fine sandy loam; common medium faint light yellowish brown (10YR 6/4) mottles; weak medium granular structure; friable; few fine and medium roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Bt3—53 to 57 inches; brownish yellow (10YR 6/6) fine sandy loam; common medium faint yellowish brown (10YR 5/8) mottles and fine medium distinct strong brown (7.5YR 5/8) and reddish yellow (5YR 6/6) mottles; weak medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; very strongly acid; abrupt smooth boundary.

C—57 to 80 inches; light yellowish brown (10YR 6/4) fine sand; common medium distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) mottles; single grained; loose; very strongly acid.

The solum is 40 to 60 inches thick. The soil is very strongly acid to medium acid throughout unless lime has been added.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3, or hue of 2.5Y, value of 4 or 5, and chroma of 2. It is 6 to 10 inches thick.

The E horizon has hue of 10YR, value of 6 to 8, and chroma of 3 to 4, or value of 5, and chroma of 4 to 8. Clean sand grains are light gray. Texture ranges from sand to loamy fine sand. The E horizon is 14 to 30 inches thick. Combined thickness of the A and E horizons is less than 40 inches.

The Bt horizon has hue of 7.5YR, 10YR, or 2.5YR, value of 5 or 6, and chroma of 4 to 8. Texture is sandy loam or fine sandy loam. The Bt horizon is 6 to 28 inches thick.

The C horizon has hue of 10YR, value of 5, and chroma of 4 to 8, or value of 6 or 7, and chroma of 3 or 4. In some pedons, the lower part of the C horizon has hue of 10YR, value of 7 or 8, and chroma of 1 or 2. Texture is loamy fine sand, fine sand, or sand.

Kinston Series

The Kinston series consists of deep, poorly drained, moderately permeable soils. These soils formed from highly variable sandy, loamy, and clayey fluvial sediment on nearly level flood plains of creeks, streams, and rivers in the Coastal Plain. They are saturated in winter and early in spring. Slope ranges from 0 to 5 percent; short, steep slopes are up to 3 feet high in old stream channels resulting from stream meander. Soils of the Kinston series are fine-loamy, siliceous, acid, thermic Typic Fluvaquents.

Kinston soils formed from, and are associated with, all the soils of the Coastal Plain. The more dominant soils are the Bibb, Bonifay, Chipley, Dothan, Fuquay, Johnston, Lakeland, Orangeburg, and Troup soils. Bibb and Johnston soils are on the flood plain. Bibb soils contain less clay than the Kinston soils, and Johnston soils are very poorly drained. Bonifay, Chipley, Dothan, Fuquay, Lakeland, Orangeburg, and Troup soils are on uplands and are better drained.

Typical pedon of Kinston loam, from an area of Kinston-Johnston-Bibb complex, frequently flooded; 2,500 feet east and 300 feet south of the northwest corner of sec. 26, T. 4 N., R. 19 W.

A—0 to 6 inches; very dark gray (10YR 3/1) loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium crumb structure; very friable; strongly acid; clear wavy boundary.

Cg1—6 to 35 inches; dark grayish brown (10YR 4/2) sandy clay loam; many coarse distinct brownish yellow (10YR 5/6) mottles and common medium distinct light olive brown (2.5Y 5/6) mottles; massive; friable; strongly acid; gradual wavy boundary.

Cg2—35 to 42 inches; light brownish gray (10YR 6/2) sandy clay loam; many coarse distinct brownish yellow (10YR 5/6) mottles and common medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; strongly acid; gradual wavy boundary.

2Cg—42 to 48 inches; light gray (10YR 7/2) sand; common medium distinct light yellowish brown (10YR 6/4) mottles; single grained; loose; strongly acid; gradual wavy boundary.

3Cg—48 to 80 inches; light gray (10YR 7/2) clay loam; common medium distinct light yellowish brown (10YR 6/4) mottles; massive; firm; strongly acid.

Dark concretions are common in some pedons of the Kinston soils. Reaction ranges from very strongly acid to strongly acid throughout except where lime has been added.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is 4 to 10 inches thick.

The Cg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2, and hue of 2.5Y, value of 4 to 6, and chroma of 2. It has few to many brownish yellow to strong brown mottles. Texture is loam, clay loam, or sandy clay loam. The Cg horizon is 36 to 62 inches thick. The 10- to 40-inch control section contains an average of 20 to 35 percent clay and has 15 percent or more fine sand or coarser particles.

The 2Cg and 3Cg horizons have hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Texture ranges from sands to loams. In some pedons, there are few to common mottles in shades of gray, brown, and yellow. Stratification is generally evident in the Cg, 2Cg, and 3Cg horizons as well as other parts of the pedon.

Kureb Series

The Kureb series consists of deep, excessively drained, very rapidly permeable soils. These soils formed in thick, sandy marine sediment on nearly level to steep sandhills and dune-like ridges. Slope ranges from 0 to 30 percent. Soils of the Kureb series are thermic, uncoated Spodic Quartzipsamments.

Kureb soils are associated with Chipley, Corolla, Dorovan, Foxworth, Lakeland, Leon, Pamlico, Newhan, Resota, and Rutlege soils. Chipley, Corolla, Dorovan, Foxworth, Leon, Pamlico, Resota, and Rutlege soils are more poorly drained than Kureb soils. Lakeland and Newhan soils do not have an E or B horizon.

Typical pedon of Kureb sand, 0 to 8 percent slopes; 2,350 feet west and 1,850 feet south of the northeast corner of sec. 12, T. 3 S., R. 20 W.

A—0 to 4 inches; gray (10YR 5/1) sand; common fine distinct very dark gray (10YR 3/1) organic matter and many white (10YR 8/1) uncoated sand grains give salt and pepper appearance; single grained; loose; many fine and medium roots; strongly acid; clear smooth boundary.

E1—4 to 10 inches; white (10YR 8/1) sand; few fine distinct dark gray (10YR 4/1) mottles along root channels; single grained; loose; common fine and medium roots; strongly acid; gradual irregular boundary.

E2—10 to 17 inches; white (10YR 8/1) sand; common coarse distinct brownish yellow (10YR 6/8) mottles that have intermittent dark brown (7.5YR 3/2) at horizon contact and along edge; few fine distinct dark gray (10YR 4/1) mottles along root channels; single grained; loose; common fine and medium roots; strongly acid; abrupt irregular boundary.

B/E—17 to 28 inches; brownish yellow (10YR 6/6) sand (B); common white (10YR 8/1) tongues (E) 1 inch to 2 inches in diameter and 5 to 11 inches long; intermittent dark brown (7.5YR 3/2) bands at horizon contact and vertically along walls of tongues; common medium faint brownish yellow (10YR 6/8) splotches; single grained; loose; few fine and common medium roots; many uncoated and coated sand grains; strongly acid; gradual wavy boundary.

Bw1—28 to 37 inches; yellowish brown (10YR 5/8) sand; single grained; loose; few fine roots; common uncoated sand grains; strongly acid; gradual wavy boundary.

Bw2—37 to 47 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine roots; common uncoated sand grains; strongly wavy boundary.

Bw3—47 to 68 inches; yellow (10YR 7/6) sand; single grained; loose; many uncoated sand grains; strongly acid; gradual wavy boundary.

C—68 to 80 inches; very pale brown (10YR 7/4) sand; single grained; loose; many uncoated sand grains; strongly acid.

Kureb soils are sandy to a depth of at least 80 inches. Reaction is neutral to very strongly acid throughout. Silt plus clay is less than 5 percent.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 1. It is 2 to 5 inches thick. Texture is sand or coarse sand.

The E horizon has hue of 10YR, value of 7 or 8, and chroma of 1 or 2. It is 4 to 37 inches thick. Texture is sand or coarse sand.

The B part of the B/E horizon has hue of 10YR, value of 3 to 6, and chroma of 3 to 8; hue of 2.5Y, value of 6, and chroma of 4; or hue of 7.5YR or 5YR, value of 2 to 4, and chroma of 2 to 4. The E part is tongues of material from the E horizon. The B/E horizon is 4 to 46 inches thick. Texture is sand or coarse sand.

The Bw horizon has hue of 10YR, value of 5 to 8, and chroma of 6 or 8. Texture is sand or coarse sand.

The C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 4. Texture is sand or coarse sand.

Lakeland Series

The Lakeland series consists of deep, excessively drained, rapidly permeable soils. These soils formed in thick, sandy marine sediment on nearly level to steep uplands. They do not have a high water table within a depth of 80 inches. Slope ranges from 0 to 30 percent. Soils of the Lakeland series are thermic, coated Typic Quartzipsamments.

Lakeland soils are associated with the Bonifay, Chipley, Dorovan, Dothan, Eglin, Foxworth, Fuquay, Lucy, Pamlico, and Troup soils. Bonifay, Dothan, Fuquay, Lucy, and Troup soils have Bt horizons. Chipley and Foxworth soils have a seasonal water table within 72 inches of the surface. Dorovan and Pamlico are organic soils. Eglin soils have a spodic horizon.

Typical pedon of Lakeland sand, 0 to 5 percent slopes; 1,400 feet south and 300 feet west of the northeast corner of sec. 22, T. 3 N., R. 20 W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) sand; single grained; loose; dark gray (10YR 3/2) organic matter and uncoated white (10YR 8/1) sand grains give salt and pepper appearance; many fine and medium roots; very strongly acid; clear wavy boundary.

C1—4 to 7 inches; yellowish brown (10YR 5/4) sand; single grained; loose; many fine and medium roots; few uncoated sand grains; very strongly acid; gradual wavy boundary.

C2—7 to 42 inches; brownish yellow (10YR 6/8) sand; single grained; loose; common fine and medium roots; few uncoated sand grains; very strongly acid; gradual wavy boundary.

C3—42 to 52 inches; brownish yellow (10YR 6/8) sand; few fine faint light yellowish brown splotches; single grained; loose; few fine roots; few uncoated sand grains; very strongly acid; gradual wavy boundary.

C4—52 to 60 inches; brownish yellow (10YR 6/6) sand; common medium distinct very pale brown (10YR 7/3) splotches; single grained; loose; few fine roots; common uncoated sand grains; very strongly acid; gradual wavy boundary.

C5—60 to 80 inches; light yellowish brown (10YR 6/4) sand; few fine faint very pale brown splotches; single grained; loose; many uncoated sand grains; very strongly acid.

Lakeland soils are sand to a depth of at least 80 inches. All horizons are medium or fine sand that has 5 to 10 percent silt plus clay in the 10- to 40-inch control section. The soil is very strongly acid to medium acid throughout. A few small quartz pebbles occur in some pedons but are less than 5 percent, by volume.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. Thickness ranges from 2 to 8 inches.

The C horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 8; or it has hue of 7.5YR, value of 5 or 6, and chroma of 6 or 8. Most sand grains between depths of 10 and 40 inches are coated. In some pedons, small pockets of light gray or white sand grains are below a depth of 40 inches. Some pedons have an AC horizon that is a mixture of gray and yellowish brown.

Leefield Series

The Leefield series consists of deep, somewhat poorly drained, moderately slowly permeable soils. These soils formed in sandy and loamy marine sediment on nearly level to gently sloping uplands. The perched water table is at a depth of 18 to 30 inches for about 4 months during most years. Slope ranges from 0 to 5 percent. Soils of the Leefield series are loamy, siliceous, thermic Arenic Plinthaquic Paleudults.

Leefield soils are associated with Albany, Bibb, Bonifay, Chipley, Dothan, Escambia, Fuquay, Johnston, Kinston, Malbis, Pactolus, Pantego, Stilson, and Troup soils. Albany, Bonifay and Troup soils have an argillic horizon at a depth of more than 40 inches. Bibb, Johnston, Kinston, and Pantego soils have a seasonal high water table closer to the surface than that of the Leefield soils. Bibb, Johnston, and Kinston soils are frequently flooded, and Pantego soils are ponded. Chipley and Pactolus soils do not have an argillic horizon. Dothan, Escambia, and Malbis soils have an argillic horizon at a depth of less than 20 inches. Fuquay and Stilson soils are better drained than Leefield soils.

Typical pedon of Leefield loamy sand, from an area of Leefield-Stilson loamy sands, 0 to 5 percent slopes; 2,400 feet south and 200 feet west of the northeast corner of sec. 31, T. 6 N., R. 20 W.

Ap—0 to 7 inches; very dark gray (10YR 3/1) loamy sand; moderate medium granular structure; very friable; many fine roots; medium acid; clear smooth boundary.

E1—7 to 15 inches; yellowish brown (10YR 5/4) loamy sand; weak medium granular structure; common fine roots; slightly acid; gradual wavy boundary.

E2—15 to 26 inches; brownish yellow (10YR 6/6) loamy sand; few fine prominent yellowish red (5YR 5/6) mottles in root channels and common medium distinct strong brown (7.5YR 5/8) mottles along root channels; weak medium granular structure; very friable; common fine roots; slightly acid; gradual wavy boundary.

Bt1—26 to 34 inches; light yellowish brown (10YR 6/4) fine sandy loam; few fine faint very pale brown mottles, few fine prominent yellowish red (5YR 5/6) mottles in root channels, and common medium distinct strong brown (7.5YR 5/8) mottles along root channels; weak medium granular structure; friable; few fine roots; sand grains coated with clay; very strongly acid; clear wavy boundary.

Bt2—34 to 40 inches; yellowish brown (10YR 5/8) sandy clay loam; many coarse distinct light gray (10YR 7/1) mottles, common medium distinct strong brown (7.5YR 5/8) mottles, and few medium distinct yellow (10YR 7/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; few mica flakes; very strongly acid; gradual wavy boundary.

Btv—40 to 49 inches; reticulately mottled grayish brown (10YR 5/2), brownish yellow (10YR 6/6), and light brown (7.5YR 6/4) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; about 8 percent plinthite; sand grains bridged and coated with clay; few mica flakes; very strongly acid; clear wavy boundary.

B't—49 to 69 inches; reticulately mottled light gray (10YR 7/2), yellow (10YR 7/6), brownish yellow (10YR 6/6), reddish brown (5YR 5/4), and red (2.5Y 4/8) sandy clay loam; strong medium subangular blocky structure; friable; sand grains bridged and coated with clay; few mica flakes; very strongly acid; gradual irregular boundary.

BC—69 to 80 inches; reticulately mottled light gray (10YR 7/2), brownish yellow (10YR 6/6), strong brown (7.5YR 5/8), red (2.5YR 4/8, 10R 4/8), light reddish brown (5YR 6/4), and dark brown (7.5YR 4/4) sandy clay loam; weak medium subangular blocky structure; few mica flakes; very strongly acid.

The solum ranges in thickness from 60 to at least 90 inches. Depth to horizons that are 5 to 20 percent plinthite ranges from 30 to 60 inches. Reaction ranges from medium acid to very strongly acid except where lime has been added.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. It is generally 7 to 12 inches thick, but where value is 3.5 or less, it is less than 10 inches thick.

The E horizon has hue of 10YR to 2.5Y, value of 5 to 7, and chroma of 2 to 6. Mottles of gray, brown, and yellow are common. The E horizon is 13 to 33 inches thick. Texture is loamy sand or sand.

Some pedons have a BE horizon. It has hue of 10YR or 2.5Y, value of 6 to 7, and chroma of 3 to 8. Few and common gray, brown, and yellow mottles are throughout the horizon. Texture is sandy loam or fine sandy loam. The BE horizon is up to 6 inches thick.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 4 to 8. It has common and many gray, brown, and red mottles. The Btv and B't horizons are reticulately mottled in shades of gray, brown, yellow, and red, or they have hue of 10YR to 2.5Y, value of 5 to 8, chroma of 1 to 8, and common or many mottles in shades of red, brown, yellow, and gray. Texture of the Bt, Btv, and B't horizons is fine sandy loam, sandy loam, or sandy clay loam. The upper 20 inches of the argillic horizon has from 15 to 25 percent clay.

Leon Series

The Leon series consists of deep, poorly drained, moderately to moderately rapidly permeable soils. These soils formed in thick, sandy marine sediment in broad, nearly level areas of the flatwoods. The water table is at a depth of 10 to 40 inches for more than 9 months during most years. It is at a depth of less than 10 inches during periods of high rainfall, and it recedes to a depth of more than 40 inches during very dry periods. Slope ranges from 0 to 2 percent. Soils of the Leon series are sandy, siliceous, thermic Aeric Haplaquods.

Leon soils are associated with the Chipley, Dorovan, Foxworth, Hurricane, Kureb, Lakeland, Mandarin, Pamlico, Pickney, Resota, and Rutlege soils. All of these soils except the Dorovan, Pamlico, Pickney, and Rutlege soils are better drained than the Leon soils. Dorovan, Pamlico, Pickney, and Rutlege soils are very poorly drained. Dorovan and Pamlico soils are organic.

Typical pedon of Leon sand; 2,800 feet south and 100 feet west of the northeast corner of sec. 31, T. 2 S., R. 19 W.

A1—0 to 5 inches; very dark gray (10YR 3/1) sand; mixture of organic matter and uncoated sand grains; weak medium granular structure; very friable; many fine roots; very strongly acid; gradual wavy boundary.

A2—5 to 9 inches; very dark gray (10YR 4/1) sand; weak medium granular structure; very friable; common fine roots; many uncoated sand grains; extremely acid; clear wavy boundary.

E—9 to 18 inches; gray (10YR 5/1) sand; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; abrupt smooth boundary.

Bh1—18 to 22 inches; dark reddish brown (5YR 2/2) sand; massive; friable, compact and slightly brittle; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

Bh2—22 to 27 inches; black (5YR 2/1) loamy sand; about 40 percent, by volume, dark reddish brown (5YR 2/2, 3/2) weakly cemented to moderately cemented and firm masses; massive; compact and brittle; friable; sand grains well coated with colloidal organic matter; very strongly acid; clear wavy boundary.

BE—27 to 31 inches; yellowish brown (10YR 5/6) sand; common medium distinct dark brown (10YR 4/3) sand masses and few fine distinct strong brown (7.5YR 5/6) mottles; single grained; loose; common uncoated sand grains; very strongly acid; gradual wavy boundary.

E'—31 to 67 inches; white (10YR 8/1) sand; few fine distinct dark brown (10YR 4/3) mottles along root channels; single grained; loose; many uncoated sand grains; strongly acid; gradual wavy boundary.

B'h—67 to 80 inches; very dark gray (10YR 3/1) sand; massive; very friable; common uncoated sand grains; very strongly acid.

Leon soils range from extremely acid to strongly acid except where lime has been added.

The A or Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1; or it is neutral and has value of 2 to 4. When dry, this horizon has a salt and pepper appearance caused by the mixing of organic matter and white sand grains. The A or Ap horizon is 2 to 9 inches thick. Texture is sand or fine sand.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2, or it is neutral and has value of 5 to 7. In some pedons, this horizon has mottles of stronger chroma and vertical, black or very dark gray streaks. Texture is sand or fine sand. The E horizon is 4 to 22 inches thick. Combined thickness of the A and E horizons is less than 30 inches.

The Bh horizon has hue of 10YR, 7.5YR, or 5YR, value of 2 or 3, and chroma of 1 to 3. It is compact and brittle when dry. Vertical or horizontal tongues or masses of gray or light gray sand are in some horizons. Some pedons have Bh material that is weakly cemented to moderately cemented and firm to very firm. The Bh horizon is 6 to 20 inches thick.

The BE horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 6. This horizon generally contains Bh material. Texture is sand, fine sand, loamy fine sand, or loamy sand. The BE horizon is up to 12 inches thick. Some pedons do not have a BE horizon.

The E' horizon has hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. Texture is sand or fine sand. The E' horizon is up to 36 inches thick. Some pedons do not have an E' horizon.

The B'h horizon is similar in color to the Bh horizon, but it occurs below the E' or BE horizon. Texture is sand or fine sand. Some pedons do not have a B'h horizon.

Pedons that do not have E' and B'h horizons are underlain by a C horizon that extends to a depth of more than 80 inches. The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 4. Texture is sand or fine sand.

Lucy Series

The Lucy series consists of deep, nearly level to sloping, well drained soils. These soils formed in sandy and loamy marine sediment on broad and narrow ridgetops and side slopes of the uplands. They are droughty in the summer. Slope ranges from 0 to 8 percent. Soils of the Lucy series are loamy, siliceous, thermic Arenic Paleudults.

Lucy soils are associated with Albany, Bonifay, Chipley, Dothan, Escambia, Foxworth, Fuquay, Leefield, Orangeburg, Pantego, Stilson, Tifton, and Troup soils. Albany, Escambia, Leefield, Pantego, and Stilson soils are more poorly drained than Lucy soils. Bonifay and Troup soils have a Bt horizon below a depth of 40 inches. Chipley and Foxworth soils do not have a Bt horizon. Dothan, Orangeburg, and Tifton soils have a Bt horizon within a depth of 20 inches. Fuquay soils have a Bt horizon between depths of 20 and 40 inches and have more than 5 percent plinthite within 60 inches of the surface.

Typical pedon of Lucy loamy sand, 0 to 5 percent slopes; 1,675 feet west and 1,200 feet south of the northwest corner of sec. 34, T. 6 N., R. 21 W.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy sand; weak medium granular structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.

E1—8 to 13 inches; dark yellowish brown (10YR 4/4) loamy sand; weak fine granular structure; very friable; few fine and common medium roots; very strongly acid; gradual wavy boundary.

E2—13 to 24 inches; dark brown (7.5YR 4/4) loamy sand; weak medium granular structure; very friable; few fine, medium, and coarse roots; very strongly acid; gradually wavy boundary.

E3—24 to 33 inches; strong brown (7.5YR 5/6) loamy sand; weak fine granular structure; very friable; few fine, medium, and coarse roots; very strongly acid; gradual wavy boundary.

Bt1—33 to 39 inches; red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; few fine and common medium roots; very strongly acid; gradual wavy boundary.

Bt2—39 to 72 inches; red (2.5YR 4/6) sandy clay loam; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Bt3—72 to 80 inches; yellowish red (5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid.

The solum is more than 80 inches thick. Reaction is strongly acid in the A horizon, except where lime has been added, and very strongly acid in the B horizon.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3; or hue of 7.5YR, value of 3 or 4, and chroma of 2. The A or Ap horizon is from 3 to 15 inches thick, but where value is 3.5 or less, it is less than 10 inches thick.

The E horizon has hue of 10YR, value of 4 to 6, and chroma of 4 to 6; hue of 7.5YR, value of 4, and chroma of 4; or hue of 7.5YR, value of 5, and chroma of 6 or 8. In some pedons, the E horizon has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is loamy sand. The E horizon is 14 to 28 thick.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. The Bt horizon is dominantly sandy clay loam, but ranges from sandy loam to clay loam. Clay content is between 20 and 35 percent. A few plinthite nodules are in some pedons, but they constitute less than 5 percent of any subhorizon within 60 inches of the soil surface. Mottles in shades of yellow or brown are below a depth of 36 inches in some pedons. Content of rounded quartz gravel or iron concretions, or both, is generally less than 5 percent. The gravel and concretions are less than 15 millimeters in diameter.

Some pedons have a BC horizon. It has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is sandy loam or loamy sand.

Malbis Series

The Malbis series consists of deep, moderately well drained, moderately to moderately slowly permeable soils. These soils formed in marine loamy sediment on nearly level to sloping uplands. It has a perched water table after periods of heavy rainfall. Slope ranges from 0 to 8 percent. Soils of the Malbis series are fine-loamy, siliceous, thermic Plinthic Paleudults.

Malbis soils are associated with the Dothan, Escambia, Fuquay, Leefield, Orangeburg, Stilson, and Tifton soils. Dothan soils have less than 20 percent silt in the upper 20 inches of the Bt horizon. Escambia, Leefield, and Stilson soils are more poorly drained than Malbis soils. Fuquay soils have a Bt horizon below a depth of 20 inches. Orangeburg soils have a redder Bt horizon and do not have plinthite. Tifton soils have more than 5 percent ironstone pebbles in the A and BA horizons and upper part of the Bt horizon.

Typical pedon of Malbis fine sandy loam, 2 to 5 percent slopes; 2,200 feet east and 2,000 feet south of the northwest corner of sec. 23, T. 5 N., R. 20 W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; moderate medium granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

Bt1—6 to 12 inches; brownish yellow (10YR 6/6) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; gradual wavy boundary.

Bt2—12 to 29 inches; brownish yellow (10YR 6/6) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Bt3—29 to 38 inches; brownish yellow (10YR 6/6) fine sandy loam; few fine faint yellowish brown mottles and few fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; sand grains bridged and coated with clay; few fine roots; very strongly acid; gradual wavy boundary.

Btv1—38 to 48 inches; brownish yellow (10YR 6/6) sandy clay loam; few fine distinct very pale brown (10YR 7/3), strong brown (7.5YR 5/6), and yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; friable; about 5 percent, by volume, firm brittle plinthite nodules; few fine roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btv2—48 to 60 inches; yellowish brown (10YR 5/8) fine sandy loam; few fine distinct light gray (10YR 7/2) mottles and common medium distinct strong brown (7.5YR 5/6), yellowish red (5YR 5/8), and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; about 10 percent, by volume, firm brittle plinthite nodules; few fine roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

B't—60 to 80 inches; strong brown (7.5YR 5/8) fine sandy loam; few fine distinct red (2.5YR 4/6) and yellowish red (5YR 5/8) mottles and common medium distinct light gray (10YR 7/2) and yellow (10YR 7/6) mottles; moderate medium subangular blocky structure; firm; sand grains bridged and coated with clay; very strongly acid.

The solum is more than 60 inches thick. Depth to a horizon that has 5 percent or more plinthite nodules ranges from 28 to 48 inches. Depth to a horizon dominated by firm consistence is more than 50 inches. Calcium content at a depth of 50 inches is less than 0.4 milliequivalents per 100 grams of soil. Base saturation at a depth of 50 inches is less than 20 percent. Reaction is strongly acid or very strongly acid throughout except where lime has been added.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is 4 to 8 inches thick.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 to 6, and chroma of 6 or 8. It is fine sandy loam or sandy clay loam. Mottles that have chroma of 1 or 2 are commonly below a depth of 30 inches. The upper 20 inches of the Bt horizon is from 18 to 35 percent clay, 20 to 45 percent silt, and 33 to 58 percent sand.

The Btv and B't horizons have hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 4 to 8. They have none to common gray mottles and common to many, medium to coarse, faint to prominent mottles in shades of red, brown, and yellow. The gray mottles are commonly more clayey than the brown, red, and yellow mottles. Texture is fine sandy loam, sandy clay loam, clay loam, or loam. Nodules of plinthite, by volume, range from 5 to 25 percent in the Btv horizon.

Mandarin Series

The Mandarin series consists of deep, somewhat poorly drained, moderately permeable soils. These soils formed in thick, sandy marine sediment on broad, nearly level, slightly elevated flatwoods. A seasonal high water table is at a depth of 20 to 40 inches for 4 to 6 months in most years. Slope ranges from 0 to 2 percent. Soils of the Mandarin series are sandy, siliceous, thermic Typic Haplohumods.

Mandarin soils are associated with the Chipley, Dorovan, Foxworth, Hurricane, Lakeland, Leon, Kureb, Pamlico, Pickney, Resota, and Rutlege soils. Chipley soils do not have a Bh horizon. Dorovan and Pamlico soils are very poorly drained and are organic. Foxworth, Lakeland, Kureb, and Resota soils are better drained than Mandarin soils. Hurricane soils have a spodic horizon below a depth of 50 inches. Leon soils are poorly drained. Rutlege and Pickney soils are very poorly drained and do not have a Bh horizon.

Typical pedon of Mandarin sand; 2,700 feet east and 1,250 feet north of the southwest corner of sec. 26, T. 2 S., R. 21 W.

A—0 to 8 inches; gray (10YR 6/1) sand; weak medium granular structure; very friable; many fine and common medium roots; many uncoated sand grains; extremely acid; clear smooth boundary.

E—8 to 21 inches; light gray (10YR 7/1) sand; common medium distinct dark gray (10YR 4/1) mottles along root channels; single grained; loose; many medium and common fine roots; many uncoated sand grains; extremely acid; abrupt irregular boundary.

Bh1—21 to 23 inches; black (5YR 2/1) sand; 1/4 to 1/2 inch thick layer of dark brown (7.5YR 4/2) sand at contact of E and Bh1; common light gray (10YR 7/1) tongues 2 to 5 inches wide and 5 to 21 inches deep, black sand 2 inches thick along outer boundary of tongues; massive; friable; many fine and few medium roots; sand grains well coated with colloidal organic matter; extremely acid; clear wavy boundary.

Bh2—23 to 25 inches; very dark gray (10YR 3/1) fine sand; common medium distinct dark reddish brown (5YR 2/2) firm and compact masses; massive; friable; few fine roots; sand grains well coated with colloidal organic matter; extremely acid; clear wavy boundary.

Bh3—25 to 38 inches; dark reddish brown (5YR 3/4) sand; common medium faint dark reddish brown (5YR 2/2) masses; massive; very friable; few fine roots; sand grains commonly coated with colloidal organic matter; extremely acid; gradual wavy boundary.

BC—38 to 60 inches; yellowish brown (10YR 5/4) sand; single grained; loose; few fine roots; many uncoated sand grains; very strongly acid; gradual wavy boundary.

C—60 to 80 inches; white (10YR 8/1) sand; single grained; loose; many uncoated sand grains; very strongly acid.

Mandarin soils are fine sand or sand throughout. Reaction ranges from extremely acid to medium acid.

The A horizon has hue of 10YR, value of 2 to 6, and chroma of 1; or it is neutral and has value of 3 to 5. It is 2 to 8 inches thick.

The E horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. It is 13 to 24 inches thick. Combined thickness of the A and E horizons is less than 30 inches.

The Bh horizon has hue of 5YR, value of 2 or 3, and chroma of 1 to 4; hue of 7.5YR, value of 3, and chroma of 2; or hue of 10YR, value of 2 or 3, and chroma of 1 to 3. The sand grains are well coated with organic matter.

The BC horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4; hue of 7.5YR, value of 4, and chroma of 2 to 4; or hue of 7.5YR, value of 5, and chroma of 4.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 3.

Some pedons have a bisequum of E' and B'h horizons. The E' horizon has hue of 10YR, value of 5 to 8, and chroma of 1 or 2. The B'h has the same characteristics as the Bh horizon.

Maurepas Series

The Maurepas series consists of deep, very poorly drained, moderately rapidly permeable soils. These soils formed in herbaceous and related woody hydrophytic plant remains and loamy fluvial sediment on broad, level flood plains near the end of the Choctawhatchee River and its tributaries. Slope is less than 1 percent. Soils of the Maurepas series are euic, thermic Typic Medisaprists.

Maurepas soils are associated with Bibb, Dirego, Dorovan, Johnston, Kinston, and Pamlico soils. Bibb, Johnston, and Kinston soils are mineral, and the Bibb and Kinston soils are better drained than the Maurepas soils. Dirego and Pamlico soils have a sandy substratum, and the Dirego soils contain high content of sulfur and salt. Dorovan soils are more acid.

Typical pedon of Maurepas muck, frequently flooded; 1,100 feet east and 900 feet north of the southwest corner of sec. 16, T. 2 S., R. 18 W.

Oa1—0 to 4 inches; very dark grayish brown (10YR 3/2) broken face and rubbed muck; less than 5 percent unrubbed and rubbed fiber; massive; slightly sticky; squeezes easily between fingers; about 32 percent mineral content; light yellowish brown (10YR 6/4) sodium pyrophosphate; many fine, medium, and coarse roots; very strongly acid; gradual wavy boundary.

Oa2—4 to 22 inches; very dark gray (10YR 3/1) broken face and rubbed muck; less than 5 percent unrubbed and rubbed fiber; massive; sticky; squeezes easily between fingers; about 49 percent mineral content; light yellowish brown (10YR 6/4) sodium pyrophosphate; many fine, medium, and coarse roots; very strongly acid; gradual wavy boundary.

Oa3—22 to 40 inches; black (10YR 2/1) broken face and rubbed muck; less than 5 percent unrubbed and rubbed fiber; massive; sticky; squeezes easily between fingers; about 18 percent mineral content; light yellowish brown (10YR 6/4) sodium pyrophosphate; many medium and coarse roots; very strongly acid; gradual wavy boundary.

Oa4—40 to 65 inches; very dark gray (10YR 3/1) broken face and rubbed muck; less than 5 percent unrubbed and rubbed fiber; massive; slightly sticky; squeezes easily between fingers; about 66 percent mineral content; light yellowish brown (10YR 6/4) sodium pyrophosphate; common medium and coarse roots; very strongly acid.

The organic material is more than 51 inches thick. Soil reaction is more than 4.4 in 0.01M calcium chloride. Logs, stumps, and fragments of wood are up to 20 percent of the organic layers. Flakes of mica are few to common in the mineral horizons of some pedons. Mineral content is variable, but 40 percent or more mineral matter, as weighted average, is between depths of 12 and 51 inches, or a layer containing 40 to 80 percent mineral matter 6 inches or more thick is between depths of 12 and 36 inches. The mineral fraction contains more than 75 percent silt and clay.

The Oa horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 2 or 3, and chroma of 1 or 2; or it is neutral and has value of 2 or 4. Fiber content is less than 10 percent unrubbed and rubbed. The organic layers are typically massive under natural wet conditions.

Newhan Series

The Newhan series consists of excessively drained, very rapidly permeable soils. These soils formed in thick deposits of marine sand that have been reworked by wind and wave action. These gently sloping to steep soils are on dune-like undulating ridges adjacent to the coast. Slope ranges from 2 to 30 percent. It does not have a high water table within a depth of 6 feet. Soils of the Newhan series are thermic, uncoated Typic Quartzipsamments.

Newhan soils are associated with Corolla, Foxworth, Kureb, Lakeland, Mandarin, and Resota soils. Corolla soils are more poorly drained than Newhan soils. Foxworth and Lakeland soils have a yellow substratum. Kureb and Resota soils have a yellow subsoil. Mandarin soils have a spodic horizon.

Typical pedon of Newhan sand, from an area of Newhan-Corolla sands, rolling; 2,400 feet east and 1,750 feet south of the northwest corner of sec. 34, T. 2 S., R. 21 W.

A—0 to 5 inches; light gray (10YR 7/1) sand; single grained; loose; common fine roots; mixture of organic matter and uncoated sand grains; very strongly acid; gradual wavy boundary.

C—5 to 80 inches; white (10YR 8/1) sand; common heavy black (10YR 2/1); ilmenite minerals; few fine distinct dark gray (10YR 4/1) streaks along root channels in upper part; single grained; loose; uncoated sand grains; few fine roots in upper part; very strongly acid.

Newhan soils are sand or fine sand. There are no diagnostic horizons within a depth of 7 feet. The silt plus clay content is less than 5 percent. Reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is up to 6 inches thick.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2. This horizon has few to common heavy black ilmenite minerals. It also has a few gray lenses that appear to be former A horizons that have been buried by blowing and drifting sand.

Norfolk Series

The Norfolk series consists of deep, well drained, moderately permeable soils. These soils formed in marine loamy sediment on gently sloping to strongly sloping uplands and side slopes. A seasonal perched water table is at a depth of 4 to 6 feet. Slope ranges from 2 to 12 percent. Soils of the Norfolk series are fine-loamy, siliceous, thermic Typic Paleudults.

Norfolk soils are associated with the Angie, Bibb, Bonifay, Bonneau, Cowarts, Dorovan, Dothan, Fuquay, Johnston, Kinston, Pamlico, Shubuta, and Troup soils. Angie and Shubuta soils have more clay in the B horizon than Norfolk soils. Bibb, Johnston, and Kinston soils are frequently flooded. In the Bonifay and Troup soils, the combined thickness of the A and E horizons is more than 40 inches, and in the Bonneau soils, it is 20 to 40 inches. Cowarts soils have a thinner solum. Dorovan and Pamlico soils are organic. Dothan and Fuquay soils have plinthite.

Typical pedon of Norfolk loamy sand, from an area of Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes; 1,300 feet east and 850 feet south of the northwest corner of sec. 11, T. 2 N., R. 20 W.

A—0 to 5 inches; dark grayish brown (10YR 4/2) loamy sand; moderate medium granular structure; very friable; many fine and few medium and coarse roots; few quartz pebbles 2 to 4 mm in diameter; very strongly acid; clear smooth boundary.

E—5 to 15 inches; yellowish brown (10YR 5/4) loamy sand; weak fine granular structure; very friable; common fine and few medium and coarse roots; few quartz pebbles 2 to 8 mm in diameter; very strongly acid; clear smooth boundary.

BE—15 to 17 inches; yellowish brown (10YR 5/8) sandy loam; weak fine subangular blocky structure; very friable; common fine and few medium roots; sand grains coated with clay; few quartz pebbles 2 to 8 mm in diameter; very strongly acid; clear smooth boundary.

Bt1—17 to 31 inches; brownish yellow (10YR 6/8) sandy clay loam; few fine prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Bt2—31 to 39 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium prominent red (2.5YR 4/6) mottles and common medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Bt3—39 to 62 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4), strong brown (7.5YR 5/8), and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few mica flakes; very strongly acid; clear wavy boundary.

C—62 to 80 inches; reticulately mottled light gray (10YR 7/1), yellowish brown (10YR 5/8), strong brown (7.5YR 5/8), and red (2.5YR 4/6 or 10R 4/6) sandy loam; massive; friable; common mica flakes; very strongly acid.

The loamy textured horizons commonly extend to a depth of 60 to 90 inches. Few to about 5 percent 2 to 10 millimeters rounded quartz pebbles are in the A horizon in many pedons. Reaction is strongly acid or very strongly acid except where lime has been added. Gray mottles are from 36 to 60 inches below the surface.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2. It is less than 10 inches thick. Texture is loamy sand or loamy fine sand.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. Quartz pebbles larger than 2 millimeters make up to 5 percent of the volume. The E horizon is less than 10 inches thick. Texture is loamy sand or loamy fine sand.

The BE horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 8. Texture is sandy loam or fine sandy loam. This horizon is up to 5 inches thick. Some pedons do not have a BE horizon.

The Bt horizon has hue of 7.5YR, or 10YR, value of 5 or 6, and chroma of 6 or 8. Texture is mainly sandy clay loam, but it includes fine sandy loam and clay loam.

Some pedons have a BC horizon. It has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. This horizon has mottles in shades of red and gray. It contains few to common mica flakes. Texture is sandy loam. The BC horizon is up to 15 inches thick.

The C horizon is commonly mottled red, strong brown, brownish red, and gray. Texture is variable, ranging from sand to clay.

Orangeburg Series

The Orangeburg series consists of deep, well drained, moderately permeable soils. These soils formed in thick sandy and loamy marine sediment on nearly level to strongly sloping uplands. Slope ranges from 0 to 12 percent. Soils of the Orangeburg series are fine-loamy, siliceous, thermic Typic Paleudults.

Orangeburg soils are closely associated with the Bonneau, Dothan, Fuquay, Lucy, Norfolk, Pantego, Shubuta, Tifton, and Troup soils. Bonneau, Fuquay, and Lucy soils have a Bt horizon at a depth of 20 to 40 inches, and Troup soils have a Bt horizon at a depth of 40 to 80 inches. Dothan, Norfolk, and Tifton soils have hue of 10YR or 7.5YR in the Bt horizon. Pantego soils are ponded. Shubuta soils have more than 35 percent clay in the subsoil.

Typical pedon of Orangeburg sandy loam, 1 to 5 percent slopes; 1,250 feet south and 1,150 feet west of the northeast corner of sec. 18, T. 4 N., R. 19 W.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) sandy loam; moderate medium granular structure; very friable; many fine and common medium roots; strongly acid; clear smooth boundary.

BE—10 to 17 inches; dark brown (7.5YR 4/4) sandy loam; few root channels filled with very dark grayish brown (10YR 3/2); weak medium granular structure; very friable; common fine roots; strongly acid; clear wavy boundary.

Bt1—17 to 25 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

Bt2—25 to 57 inches; red (2.5YR 4/6) sandy clay loam; few fine distinct strong brown (7.5YR 5/8) splotches; moderate medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

Bt3—57 to 69 inches; red (2.5YR 4/8) sandy clay loam; common fine distinct strong brown (7.5YR 5/8) splotches; moderate medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

Bt4—69 to 80 inches; red (2.5YR 4/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) splotches; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid.

The solum typically is 72 to 96 inches thick but it ranges from 60 to 120 inches in thickness. Reaction is very strongly acid or strongly acid throughout except where lime has been added.

The A or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4; or it has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 4. Texture is sandy loam or loamy sand. The A or Ap horizon is 6 to 10 inches thick.

Some pedons have an E horizon. It has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. Texture is loamy sand or sandy loam. The E horizon is up to 10 inches thick. Combined thickness of the A and E horizons is less than 20 inches.

The BE horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. Texture is sandy loam. The BE horizon is up to 14 inches thick.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 6 or 8. The lower part of the Bt horizon can have value of 3 and chroma of 6. Texture is sandy loam or sandy clay loam. Clay content of the upper 20 inches of the Bt horizon ranges from 20 to 35 percent, and silt content is less than 15 percent. The lower part of the Bt horizon is sandy clay loam or sandy clay with less than 45 percent clay. The Bt horizon is 45 to 63 inches thick.

Some pedons have a BC horizon. It has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. This horizon has common to many mottles in shades of brown, red, and gray. Texture is sandy clay loam, sandy clay, or sandy loam.

Osier Series

The Osier series consists of deep, poorly drained, rapidly permeable soils. These soils formed in thick sandy sediment on marine terraces in slightly depressional areas of sloughs in the flatwoods. The seasonal high water table is at or near the surface for 3 to 6 months in most years. Slope is 0 to 2 percent. Soils of the Osier series are siliceous, thermic Typic Psammaquents.

Osier soils are associated with the Albany, Chipley, Pantego, and Rutlege soils. Albany soils are better drained and have a Bt horizon within a depth of 80 inches. Chipley soils are better drained. Pantego and Rutlege soils have an umbric epipedon and are very poorly drained.

Typical pedon of Osier fine sand; 2,400 feet east and 700 feet north of the southwest corner of sec. 2, T. 2 S., R. 18 W.

Ap—0 to 4 inches; very dark grayish brown (10YR 3/2) fine sand; weak fine granular structure; very friable; extremely acid; clear wavy boundary.

C1—4 to 20 inches; grayish brown (10YR 5/2) fine sand; common medium faint pale brown (10YR 6/3) mottles and few fine distinct yellowish brown (10YR 5/4) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

C2—20 to 28 inches; pale olive (5Y 6/3) fine sand; few fine faint olive mottles; single grained; loose; very strongly acid; gradual wavy boundary.

C3—28 to 40 inches; light olive brown (2.5Y 5/4) fine sand; common medium faint light olive brown (2.5Y 5/6) mottles and few fine distinct olive (5Y 5/3) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

C4—40 to 65 inches; pale olive (5Y 6/3) fine sand; common medium distinct light yellowish brown (2.5Y 6/4) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

C5—65 to 80 inches; light yellowish brown (2.5Y 6/4) fine sand; many coarse faint light gray (2.5Y 7/2) mottles and few fine prominent olive yellow (2.5Y 6/8) mottles; single grained; loose; very strongly acid.

Osier soils are fine sand, sand, or loamy fine sand throughout. Content of silt plus clay in the 10- to 40-inch control section is 5 to 15 percent. Reaction is very strongly acid or extremely acid throughout.

The A horizon has hue of 10YR to 2.5Y, value of 2 to 4, and chroma of 1 or 2, or it is neutral and has value of 2 to 4. It is 2 to 6 inches thick.

The C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. Faint to prominent mottles generally have value of 5 to 7 and chroma of 2 to 6. In some pedons, high chroma mottles are so numerous that the matrix color appears to be that of the mottles.

Pactolus Series

The Pactolus series consists of deep, moderately well drained to somewhat poorly drained, permeable soils. These soils formed in sandy sediment on nearly level to gently sloping uplands. A high water table is within a depth of 18 to 30 inches for 1 to 4 months during most years. Slope ranges from 0 to 5 percent. Soils of the Pactolus series are thermic, coated Aquic Quartzipsamments.

Pactolus soils are associated with the Albany, Bibb, Blanton, Bonifay, Escambia, Fuquay, Kinston, Lakeland, Leefield, Lucy, Stilson, and Troup soils. Albany, Blanton, Bonifay, and Troup soils have a Bt horizon below a depth of 40 inches. Bibb and Kinston soils are poorly drained. Escambia soils have a Bt horizon at a depth of less than 20 inches, and Fuquay, Leefield, Lucy, and Stilson soils have a Bt horizon at a depth of 20 to 40 inches. Lakeland soils are better drained than Pactolus soils.

Typical pedon of Pactolus loamy sand, from an area of Albany-Pactolus loamy sands, 0 to 5 percent slopes; 550 feet west and 120 feet south of the northeast corner of sec. 6, T. 5 N., R. 21 W.

A1—0 to 6 inches; black (10YR 2/1) loamy sand; few medium faint very dark gray (10YR 3/1) streaks; moderate medium granular structure; friable; many coarse, medium, and fine roots; very strongly acid; gradual wavy boundary.

A2—6 to 12 inches; dark grayish brown (10YR 4/2) loamy sand; moderate medium granular structure; very friable; common medium and few coarse roots; very strongly acid; clear wavy boundary.

C1—12 to 22 inches; brownish yellow (10YR 6/6) loamy sand; weak medium granular structure; very friable; common medium and coarse roots and few fine roots; very strongly acid; gradual wavy boundary.

C2—22 to 28 inches; brownish yellow (10YR 6/6) loamy sand; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium granular structure; very friable; very strongly acid; gradual wavy boundary.

C3—28 to 57 inches; brownish yellow (10YR 6/6) sand; common medium distinct light gray (10YR 7/2) and strong brown (7.5YR 5/8) mottles and common medium prominent yellowish red (5YR 5/8) and red (2.5YR 4/8) mottles; weak medium granular structure; very friable; very strongly acid; gradual wavy boundary.

C4—57 to 80 inches; yellowish brown (10YR 5/6) sand; common medium distinct light gray (10YR 6/2) mottles and common medium prominent red (2.5YR 4/6) mottles; common medium distinct strong brown

(7.5YR 5/6) lumps that are compact and hard; weak medium granular structure; friable; very strongly acid.

Pactolus soils are sandy to a depth of at least 80 inches. The 10- to 40-inch control section contains 10 to 25 percent silt plus clay. Reaction is strongly acid or very strongly acid except where the surface has been limed.

The A or Ap horizon has hue of 10YR, value of 2 to 5, and chroma of 1, or has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2. Texture is loamy sand or loamy fine sand. Where value is 3.5 or less, the A or Ap horizon is less than 10 inches thick.

The upper part of the C horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 8, or hue of 2.5Y, value of 6, and chroma of 6 or 8. The lower part of the C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 6. Common mottles in shades of gray occur at a depth of less than 40 inches, and a few gray mottles can be as shallow as 20 inches below the surface in some pedons. The gray is indicative of wetness. In some pedons, a few fine mottles in shades of yellow, brown, and red are in the C horizon. Texture is sand, fine sand, loamy sand, or loamy fine sand.

Pamlico Series

The Pamlico series consists of deep, very poorly drained, moderately permeable soils. These soils formed from the decomposition of woody and herbaceous plant remains on broad, nearly level flood plains of major streams and large hardwood swamps. The high water table is at or above the surface for long durations. Slope is less than 1 percent. Soils of the Pamlico series are sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists.

Pamlico soils are associated with Chipley, Dorovan, Kinston, Maurepas, and Rutlege soils. Chipley, Kinston, and Rutlege soils are mineral soils. Dorovan and Maurepas soils are organic to a depth of at least 51 inches.

Typical pedon of Pamlico muck, in an area of Dorovan-Pamlico association, frequently flooded; in a swamp, 1,500 feet south and 1,350 feet east of the northwest corner of sec. 6, T. 2 N., R. 21 W.

Oa1—0 to 2 inches; dark reddish brown (5YR 2/2) muck that remains dark reddish brown when rubbed and pressed; 10 percent unrubbed fiber, less than 5 percent rubbed; 19.2 percent mineral content; brown (10YR 5/3) sodium pyrophosphate extract; weak coarse granular structure; non-sticky; common fine roots; extremely acid; clear wavy boundary.

Oa2—2 to 30 inches; black (10YR 2/1) muck that remains black when rubbed; 28.6 percent mineral content; dark brown (10YR 3/1) sodium pyrophosphate extract; massive; non-sticky; few fine roots in upper part; extremely acid; gradual wavy boundary.

C—30 to 80 inches; very dark grayish brown (10YR 3/2) sand; single grained; nonsticky; common streaks of quartz pebbles; extremely acid.

Depth to the underlying sandy material ranges from 16 to 51 inches. Reaction is less than 4.5 in 0.01 calcium chloride.

The Oa horizon has hue of 10YR or 5YR, value of 2 or 3, and chroma of 1 or 2; or hue of 7.5YR, value of 2 or 3, and chroma of 2. Fiber content is 5 to 30 percent unrubbed and 2 to 16 percent after rubbing. Structure is coarse granular or massive.

The C horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Texture is fine sand, sand, loamy fine sand, or loamy sand.

Pantego Series

The Pantego series consists of deep, very poorly drained, moderately permeable soils. These soils formed from sandy and loamy sediment in depressions and nearly level areas where water ponds. The water table is at or near the surface for long periods, and water ponds for 3 to 6 months in most years. Soils of the Pantego series are fine-loamy, siliceous, thermic Umbric Paleaquults.

Pantego soils are associated with Bibb, Bonifay, Bonneau, Dorovan, Dothan, Escambia, Fuquay, Johnston, Kinston, Leefield, Lucy, Malbis, Norfolk, Orangeburg, Pamlico, Stilson, and Troup soils. Most of these soils are better drained than the Pantego soils. The Bibb, Kinston, and Johnston soils are frequently flooded, and the Dorovan and Pamlico soils are organic.

Typical pedon of Pantego loam, depressional; 500 feet south and 100 feet east of the northwest corner of sec. 33, T. 6 N., R. 20 W.

A1—0 to 8 inches; very dark gray (10YR 3/1) loam; weak medium granular structure; nonsticky; many fine roots; very strongly acid; gradual wavy boundary.

A2—8 to 17 inches; very dark gray (10YR 3/1) loam; weak medium granular structure; slightly sticky; few fine roots; very strongly acid; gradual wavy boundary.

Btg1—17 to 24 inches; dark gray (10YR 4/1) sandy clay loam; common fine distinct light olive brown (2.5Y 5/6) mottles; weak fine subangular blocky structure; sticky; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btg2—24 to 35 inches; dark gray (10YR 4/1) sandy clay loam; common fine distinct gray (10YR 6/1) mottles; weak fine subangular blocky structure; sticky; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btg3—35 to 58 inches; gray (10YR 5/1) sandy clay loam; common fine distinct yellowish brown (10YR 5/6) mottles and few fine faint gray mottles; weak fine subangular blocky structure; sticky; sand grains bridged and coated with clay; very strongly acid; gradual wavy boundary.

Btg4—58 to 80 inches; gray (10YR 5/1) sandy clay loam; common medium distinct dark gray (10YR 4/1) and gray (10YR 6/1) mottles and few fine distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; slightly sticky; sand grains bridged and coated with clay; very strongly acid.

The solum ranges in thickness from 60 inches to more than 75 inches. Reaction is strongly acid to extremely acid.

Some undisturbed areas have a thin Oa horizon. It has hue of 10YR, value of 2 or 3, and chroma of 1. This thin organic mat quickly subsides and deteriorates when the soil is drained or if the surface is mixed by plowing.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1. It is 8 to 20 inches thick.

The Btg horizon has hue of 10YR, value of 3 or 4, and chroma of 1, or value of 5 to 7, and chroma of 1 or 2. The darker colors are in the upper part of the horizon; few to common mottles of higher chroma are in the lower part. Texture is sandy clay loam, sandy loam, loam, sandy clay, or clay loam. The upper 20 inches of the Btg contains 18 to 35 percent clay and less than 30 percent silt. The Btg horizon is at least 40 inches thick.

Some pedons have a BC horizon. It has hue of 10YR, value of 5 to 7, and chroma of 1 or 2, and has few to common mottles of higher chroma. Texture is sandy clay loam, sandy loam, or loamy sand.

Pickney Series

The Pickney series consist of deep, very poorly drained, rapidly permeable, sandy soils. These soils formed in marine sediment on nearly level drainageways and in depressions on flatwoods. Water ponds for about 4 months annually. Slope is less than 2 percent and concave. Soils of the Pickney series are sandy, siliceous, thermic Cumulic Humaquepts.

Pickney soils are associated with the Chipley, Foxworth, Hurricane, Leon, Mandarin, Pamlico, and Rutlege soils. Except for the Pamlico and Rutlege soils, these soils are better drained than the Pickney soils. Pamlico soils are organic. Rutlege soils have an umbric epipedon.

Typical pedon of Pickney sand, depressional; 2,900 feet west and 1,000 feet south of the northeast corner of sec. 26, T. 3 S., R. 18 W.

A—0 to 37 inches; black (10YR 2/1) sand; mixture of organic matter and uncoated sand grains; weak medium granular structure; very friable; many fine, medium, and coarse roots; extremely acid; clear wavy boundary.

C1—37 to 65 inches; dark gray (10YR 4/1) sand; common medium faint gray (10YR 5/1) streaks and common medium faint very dark gray (10YR 3/1) streaks along root channels; single grained; loose; many uncoated sand grains; few fine roots; extremely acid; gradual wavy boundary.

C2—65 to 80 inches; very dark gray (10YR 3/1) sand; single grained; loose; common uncoated sand grains; extremely acid.

The soil is extremely acid to strongly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2, or it is neutral and has value of 2 or 3. The A horizon is 24 to 60 inches thick.

The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 3 to 7, and chroma of 1 or 2, or it is neutral and has value of 3 to 7. It is loamy fine sand, loamy sand, fine sand, or sand.

Resota Series

Resota series consists of deep, moderately well drained, very rapidly permeable soils. These soils formed in thick beds of sandy marine deposits on broad, nearly level to gently sloping, moderately elevated ridges on flatwoods. A high water table is at a depth of 40 to 60 inches for at least 6 months in most years. Soils of the Resota series are thermic, uncoated Spodic Quartzipsamments.

Resota soils are associated with the Chipley, Eglin, Foxworth, Hurricane, Kureb, and Mandarin soils. Chipley and Foxworth soils do not have a spodic horizon. Eglin, Hurricane, and Mandarin soils have a spodic horizon. Kureb soils are better drained than Resota soils.

Typical pedon of Resota sand, 0 to 5 percent slopes; 2,800 feet south and 1,600 feet east of the southwest corner of sec. 29, T. 2 S., R. 19 W.

A—0 to 3 inches; gray (10YR 5/1) sand; weak medium granular structure; very friable; many fine and medium roots; extremely acid; clear smooth boundary.

E—3 to 13 inches; light gray (10YR 7/1) sand; few fine distinct very dark gray (10YR 3/1) streaks in old root channels; single grained; loose; many fine and medium roots; very strongly acid; abrupt irregular boundary.

Bw1—13 to 19 inches; yellowish brown (10YR 5/8) sand; few fine distinct very dark gray (10YR 3/1) streaks in old root channels; about 20 percent light gray (10YR 7/1) tongues from E horizon; brown (7.5YR 5/4) exterior on tongues; weak medium granular structure; very friable; common fine and few medium roots; very strongly acid; gradual wavy boundary.

Bw2—19 to 31 inches; yellowish brown (10YR 5/8) sand; few fine distinct very dark gray (10YR 3/1) streaks in old root channels; weak medium granular structure; very friable; common fine and few medium roots; very strongly acid; gradual wavy boundary.

Bw3—31 to 40 inches; brownish yellow (10YR 6/6) sand; few fine faint yellowish brown mottles; few fine distinct very dark gray (10YR 3/1) streaks in old root channels; weak medium granular structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

Bw4—40 to 53 inches; very pale brown (10YR 7/4) sand; few fine faint strong brown mottles; few fine distinct very dark gray (10YR 3/1) streaks in old root channels; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

C—53 to 80 inches; white (10YR 8/1) sand; few fine distinct very dark gray (10YR 3/1) streaks in old root channels; single grained; loose; few fine roots; strongly acid.

The solum is at least 40 inches thick. Texture is sand or fine sand throughout. Reaction ranges from extremely acid to slightly acid.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is 2 to 5 inches thick. A mixture of dark organic matter and light gray uncoated sand grains gives the surface a salt and pepper effect.

The E horizon has hue of 10YR, value of 6 or 8, and chroma of 1 or 2. It is 6 to 34 inches thick.

The Bw horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 4 to 8. Few to common yellowish or reddish mottles are in the Bw horizon below a depth of 40 inches. In some pedons, the Bw horizon has thin discontinuous Bh masses at the base of the E horizon and surrounding tongues of E material. The Bw horizon is 10 to 50 inches thick.

The C horizon has hue of 10YR, value of 6 to 8, and chroma of 1 to 4. In some pedons, it has few to common yellow, brown, or red mottles. Some pedons have very dark gray streaks in old root channels.

Rutlege Series

The Rutlege series consists of deep, very poorly drained, rapidly permeable soils (fig. 18). These soils formed in thick, sandy sediment on marine terraces. They are saturated in winter and early in spring. The water table is at or near the surface for long periods, and shallow ponding is common. Slope is less than 2 percent. Soils of the Rutlege series are sandy, siliceous, thermic Typic Humaquepts.

Rutlege soils are associated with Chipley, Dorovan, Foxworth, Hurricane, Kureb, Leon, Pamlico, Pickney, and Resota soils. Except for the Dorovan, Pamlico, and Pickney soils, all of these soils are better drained than the Rutlege soils. The Dorovan, Pamlico, and Pickney soils are very poorly drained. Dorovan and Pamlico soils are organic, and Pickney soils have an umbric epipedon more than 24 inches thick.

Typical pedon of Rutlege fine sand; 800 feet east and 650 feet south of the northwest corner of sec. 14, T. 2 S., R. 20 W.

A—0 to 17 inches; black (10YR 2/1) fine sand; weak medium granular structure; very friable; mixture of organic matter and uncoated sand grains; many fine and common medium and coarse roots; extremely acid; gradual wavy boundary.

Cg1—17 to 22 inches; grayish brown (2.5Y 5/2) fine sand; common medium distinct dark gray (10YR 4/1) mottles along root channels; single grained; loose; common fine and medium roots; extremely acid; gradual wavy boundary.

Cg2—22 to 60 inches; light brownish gray (2.5YR 6/2) fine sand; few fine distinct dark gray (10YR 4/1) mottles along root channels, common medium faint pale brown (10YR 6/3) mottles; single grained; loose; few fine roots in upper part; extremely acid; gradual wavy boundary.

Cg3—60 to 80 inches; light gray (10YR 7/1) fine sand; single grained; loose; extremely acid.

Content of silt plus clay in the 10- to 40-inch control section is 5 to 15 percent. This soil is very strongly acid or extremely acid throughout.

The A horizon has hue of 10YR to 5Y, value of 2 or 3, and chroma of 1 or 2, or it is neutral and has value of 2 or 3. The A horizon ranges in thickness from 10 to 24 inches. The upper 6 to 12 inches of the A horizon contains 3 to 10 percent organic matter. Below that, the organic matter content is somewhat less.

The Cg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2; or it is neutral and has value of 4 to 7. This horizon has faint to prominent mottles that have value of 5 to 8 and chroma of 1 to 6. In some pedons, high chroma mottles are so numerous that the matrix color appears to be that of the mottles. The Cg horizon is sand, fine sand, loamy sand, or loamy fine sand.

Shubuta Series

The Shubuta series consists of deep, well drained, moderately slowly permeable soils. These soils formed in clayey sediment on gently sloping to strongly sloping uplands. Slopes range from 2 to 12 percent. Soils of the Shubuta series are clayey, mixed, thermic Typic Paleudults.

Shubuta soils are associated with the Angie, Bonneau, Cowarts, Dothan, Fuquay, Lucy, Norfolk, and Orangeburg soils. Angie soils have mottles within a depth of 30 inches that have chroma of 1 or 2. Bonneau, Cowarts, Norfolk, Lucy, and Orangeburg soils have a Bt horizon containing less than 35 percent clay. Dothan and Fuquay

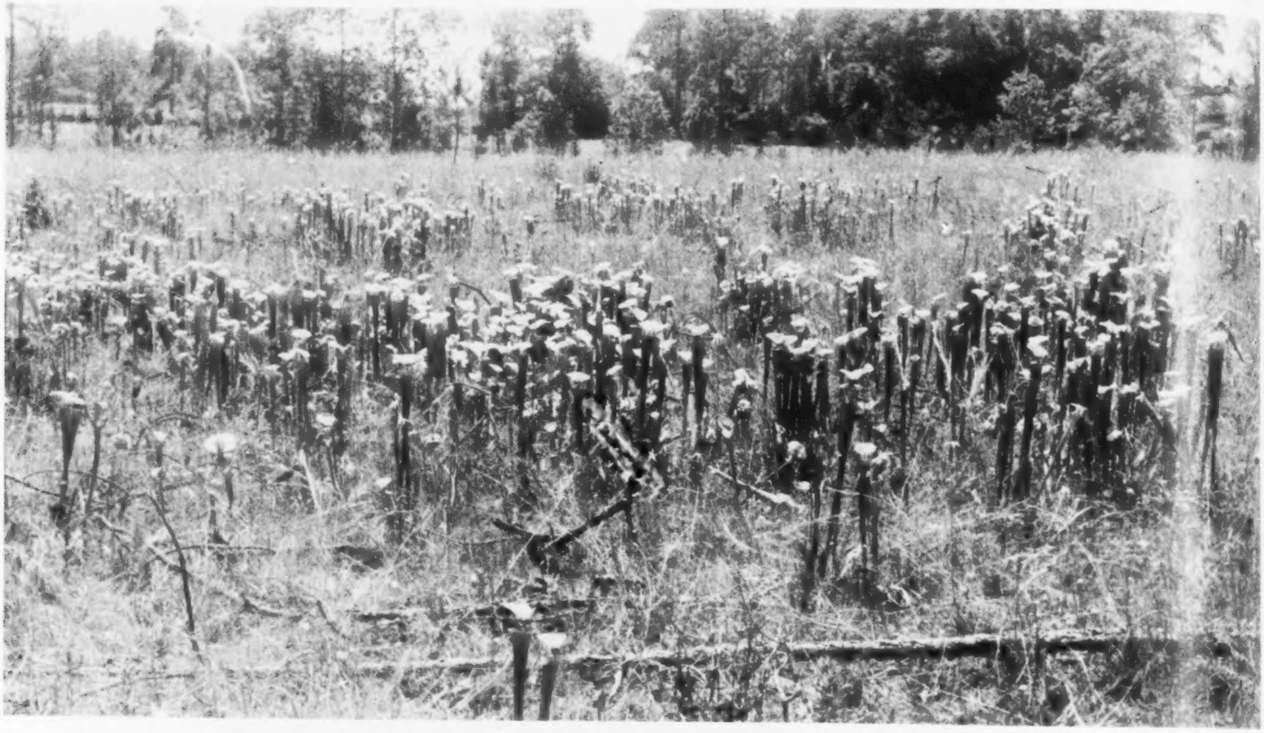

Figure 18.—Pitcherplants grow on wet soils. These plants are in an area of Rutlege fine sand.

soils have layers containing more than 4 percent plinthite within 60 inches of the surface, and these soils contain less than 35 percent clay in the Bt horizon.

Typical pedon of Shubuta fine sandy loam, 2 to 5 percent slopes; 2,900 feet north and 1,300 feet west of the southeast corner of sec. 18, T. 3 N., R. 17 W.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) fine sandy loam; moderate medium granular structure; friable; many fine and few medium roots; strongly acid; clear wavy boundary.

E—6 to 11 inches; dark brown (7.5YR 4/4) fine sandy loam; strong medium granular structure; friable; few fine and medium roots; strongly acid; gradual wavy boundary.

Bt1—11 to 17 inches; yellowish red (5YR 4/6) clay; moderate medium subangular blocky structure; firm; few fine and medium roots; clay films on surface of peds; strongly acid; gradual wavy boundary.

Bt2—17 to 34 inches; red (2.5YR 4/8) clay; common medium prominent reddish yellow (7.5YR 6/8) mottles; strong brown (7.5YR 4/6) mottles along ped surfaces; strong medium subangular blocky structure; very firm; few fine and medium roots; clay films on surface of peds; few mica flakes; strongly acid; gradual wavy boundary.

Bt3—34 to 51 inches; red (2.5YR 4/8) sandy clay; few fine prominent light brownish gray (10YR 6/2) mottles and common medium prominent very pale brown (10YR 7/4) mottles; strong brown (7.5YR 4/6) mottles along ped surfaces; strong medium subangular blocky structure; very firm; few fine and medium roots; clay films on surface of peds; few mica flakes; strongly acid; gradual wavy boundary.

Bt4—51 to 69 inches; reticulately mottled red (2.5YR 4/8), reddish yellow (7.5YR 6/8), and light gray (10YR 7/2) sandy clay; strong brown (7.5YR 4/6) mottles along ped surfaces; strong medium subangular blocky structure; very firm; few fine roots; clay films on surface of peds; few mica flakes; strongly acid; gradual wavy boundary.

Bt5—69 to 80 inches; reticulately mottled dark red (10R 3/6), light gray (10YR 7/2), and reddish yellow (7.5YR 6/8) clay; strong medium subangular blocky structure; very firm; few fine roots; clay films on surface of peds; few mica flakes; strongly acid.

The solum is more than 60 inches thick. Reaction is strongly acid or very strongly acid except where lime has been added.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2. It is 2 to 6 inches thick.

The E horizon has hue of 10YR or 7.5YR, value of 4 to 5, and chroma of 3 to 4. Texture is sandy loam or fine sandy loam. It is 4 to 10 inches thick.

The upper part of the Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. The lower part of the Bt horizon has similar colors to those of the upper part, or is strong brown (7.5YR 5/6, 5/8) or reddish yellow (7.5YR 6/6, 6/8) and has brown, gray, and olive mottles; or it is mottled in shades of gray, red, and brown. The upper part of the Bt horizon is clay or sandy clay. The lower part also includes sandy clay loam. A secondary clay bulge is evident in the lower part of the Bt horizon of some pedons. The upper 20 inches of the Bt horizon is from 35 to 55 percent clay. Few to common mica flakes are in many pedons.

Stilson Series

The Stilson series consists of deep, moderately well drained, moderately permeable soils. These soils formed in sandy and loamy marine sediment on nearly level to gently sloping uplands. A perched water table is at a depth of 30 to 40 inches for 1 to 4 months. Slope ranges from 0 to 5 percent. Soils of the Stilson series are loamy, siliceous, thermic Arenic Plinthic Paleudults.

Stilson soils are associated with Albany, Bibb, Bonifay, Dothan, Escambia, Fuquay, Johnston, Kinston, Leefield, Malbis, Pactolus, Pantego, and Troup soils. Albany, Bonifay, and Troup soils have an argillic horizon below a depth of 40 inches. Bibb, Johnston, and Kinston soils are frequently flooded. Dothan, Escambia, and Malbis soils have an argillic horizon at a depth of less than 20 inches. Fuquay soils are better drained than Stilson soils, do not have mottles of chroma of 2 or less within 40 inches of the surface, and have a perched water table for only a few days in wet periods. Leefield soils are somewhat poorly drained, have mottles of chroma of 2 or less within the upper 5 inches of the argillic horizon, and have a more shallow perched water table for several months during the year. Pactolus soils do not have an argillic horizon. Pantego soils are poorly drained and are ponded.

Typical pedon of Stilson loamy sand, from an area of Leefield-Stilson loamy sands, 0 to 5 percent slopes; 2,400 feet south and 100 feet west of the northeast corner of sec. 31, T. 6 N., R. 20 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loamy sand; moderate medium granular structure; very friable; many fine roots; medium acid; clear wavy boundary.

E1—7 to 11 inches; brown (10YR 5/3) loamy sand; weak medium granular structure; very friable; common fine roots; medium acid; gradual wavy boundary.

E2—11 to 16 inches; yellowish brown (10YR 5/4) loamy sand; weak medium granular structure; very friable; common fine roots; medium acid; gradual wavy boundary.

E3—16 to 25 inches; brownish yellow (10YR 6/6) loamy sand; weak medium granular structure; very friable; common fine roots; strongly acid; clear wavy boundary.

Bt—25 to 32 inches; brownish yellow (10YR 6/6) fine sandy loam; weak medium subangular structure; friable; few fine roots; sand grains coated with clay; very strongly acid; clear wavy boundary.

Btv—32 to 43 inches; reticulately mottled light gray (10YR 7/1), strong brown (7.5YR 5/8), light reddish brown (5YR 6/3), and red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; about 10 percent plinthite; sand grains bridged and coated with clay; few mica flakes; very strongly acid; gradual wavy boundary.

B't1—43 to 53 inches; reticulately mottled light gray (10YR 7/1), strong brown (7.5YR 5/8), light reddish brown (5YR 6/3), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; sand grains bridged and coated with clay; few mica flakes; very strongly acid; gradual wavy boundary.

B't2—53 to 80 inches; reticulately mottled light gray (10YR 7/1), yellow (10YR 7/6), strong brown (7.5YR 5/8), and red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid.

The solum ranges in thickness from 60 to more than 90 inches. Horizons that have more than 5 percent plinthite are 30 to 50 inches below the surface. Content of weakly cemented and strongly cemented ironstone pebbles ranges from 0 to 5 percent in the A and E horizons and the upper part of the Bt horizon. Reaction is strongly acid or very strongly acid except where lime has been added.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. It is 2 to 9 inches thick.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 6. It is 18 to 34 inches thick. Texture is loamy sand or sand. Combined thickness of the A and E horizon is 20 to 40 inches.

Some pedons have a BE horizon. It has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 6 or 8. Texture is sandy loam.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8. The Btv and B't horizons are reticulately mottled in shades of gray, brown, yellow, and red. Texture of the Bt, Btv, and B't horizons is sandy clay loam, fine sandy loam, or sandy loam. The upper 20 inches of the argillic horizon contains less than 20 percent silt. Plinthite ranges from 5 to 20 percent in the Btv horizon.

Tifton Series

The Tifton series consists of deep, well drained, moderately slowly permeable soils. These soils formed in loamy marine sediment on nearly level to sloping uplands. A perched high water table at a depth of 42 to 72 inches occurs after heavy rainfalls. Slopes range from 0 to 8 percent. Soils of the Tifton series are fine-loamy, siliceous, thermic Plinthic Paleudults.

Tifton soils are associated with Dothan, Fuquay, Malbis, Norfolk, Orangeburg, and Troup soils. All of these soils have less than 5 percent ironstone pebbles in all horizons. Norfolk, Orangeburg, and Troup soils have less than 5 percent plinthite throughout. Fuquay soils have a Bt horizon beginning at a depth of 20 to 40 inches. Malbis soils have more silt in the upper part of the Bt horizon than Tifton soils.

Typical pedon of Tifton fine sandy loam, 2 to 5 percent slopes; 1,950 feet north and 1,350 feet east of the southwest corner of sec. 33, T. 5 N., R. 18 W.

Ac1—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; moderate medium granular structure; very friable; 12 percent, by volume, ironstone pebbles; many fine and common medium roots; very strongly acid; clear wavy boundary.

Ac2—4 to 9 inches; dark brown (10YR 4/3) fine sandy loam; weak medium granular structure; very friable; 10 percent, by volume, ironstone pebbles; common fine and few common roots; very strongly acid; clear wavy boundary.

BE—9 to 13 inches; yellowish brown (10YR 5/8) gravelly fine sandy loam; weak medium subangular blocky structure; friable; 15 percent, by volume, ironstone pebbles; common fine roots; very strongly acid; gradual wavy boundary.

Btcv1—13 to 27 inches; yellowish brown (10YR 5/8) gravelly sandy clay loam; moderate medium subangular blocky structure; friable; 30 percent, by volume, ironstone pebbles; 19 percent, by volume, firm brittle plinthite; sand grains bridged and coated with clay; common fine roots; very strongly acid; gradual wavy boundary.

Btcv2—27 to 51 inches; yellowish brown (10YR 5/8) gravelly sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles and common medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; 20 percent, by volume, ironstone pebbles; about 21 percent, by volume, firm brittle plinthite; few fine roots; sand grains bridged and coated with clay; few clay films along ped faces; very strongly acid; gradual wavy boundary.

Btcv3—51 to 57 inches; yellowish brown (10YR 5/8) gravelly sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles and common medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; 10 percent, by volume, ironstone pebbles; about 7 percent, by volume, firm brittle plinthite; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

Btc—57 to 80 inches; reticulately mottled yellowish brown (10YR 5/8), red (2.5YR 4/8), strong brown (7.5YR 5/8), yellowish red (5YR 5/8), light gray (10YR 7/2), very pale brown (10YR 7/3), and dark yellowish brown (10YR 4/6) gravelly sandy clay loam; weak medium subangular blocky structure; firm; 20 percent, by volume, ironstone pebbles; sand grains bridged and coated with clay; very strongly acid.

The solum ranges in thickness from 60 to at least 80 inches. Reaction is very strongly acid or strongly acid throughout except where lime has been added. Ironstone nodules range from 5 to 25 percent, by volume, in the A and BE horizons, 5 to 50 percent in the Btcv horizon, and from none to 20 percent in the Btc horizon. Horizons that have more than 5 percent plinthite are at a depth of 27 to 50 inches.

The Apc or Ac horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is 6 to 10 inches thick. Texture is fine sandy loam or gravelly fine sandy loam.

The BE horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Texture is sandy loam, fine sandy loam, or gravelly fine sandy loam. The BE horizon is up to 10 inches thick. Some pedons do not have a BE horizon.

The Btcv horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Mottles in shades of red range from few to many. Mottles that have chroma of 2 or less are below a depth of 30 inches. Texture is gravelly sandy clay loam or sandy clay loam. Clay content of the upper 20 inches of the Btcv horizon ranges from 18 to 35 percent, and silt content is 20 percent or less.

The Btc horizon is reticulately mottled in hue of 10YR to 2.5YR, value of 4 to 7, and chroma of 1 to 8. Texture is gravelly sandy clay loam or sandy clay loam. The gray mottles are commonly more clayey than the brown, red, and yellow mottles.

Tifton soils in Walton County are taxadjuncts to the Tifton series because the depth to horizons that have more than 5 percent plinthite is less than allowed in the series and the amount of ironstone fragments is slightly more in the lower part of the Btc horizon. This does not significantly affect use and management of these soils.

Troup Series

The Troup series consists of well drained, moderately permeable soils. These soils formed in sandy and loamy marine sediment on nearly level to steep uplands. Slope ranges from 0 to 25 percent. Soils of the Troup series are loamy, siliceous, thermic Grossarenic Paleudults.

Troup soils are associated with the Albany, Blanton, Bonifay, Chipley, Dorovan, Dothan, Foxworth, Fuquay, Lakeland, Lucy, Pamlico, Pantego, and Tifton soils. Albany and Blanton soils have mottles that have chroma of 1 or 2 in the E and Bt horizons. These soils are more poorly drained than Troup soils. Bonifay soils are yellower in the Bt horizon and have more than 5 percent plinthite within a depth of 60 inches. Chipley and Foxworth soils do not have a Bt horizon and have a seasonal high water table. Dorovan and Pamlico are organic soils. Water ponds on the Pantego soils. Dothan and Tifton soils have a Bt horizon at a depth of less than 20 inches. Fuquay and Lucy soils have a Bt horizon at a depth of 20 to 40 inches. Lakeland soils do not have a Bt horizon.

Typical pedon of Troup sand, 0 to 5 percent slopes; 2,000 feet east and 1,800 feet south of the northwest corner of sec. 2, T. 5 N., R. 20 W.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) sand; moderate medium granular structure; very friable; many fine roots and common and few coarse roots; strongly acid; abrupt smooth boundary.

E1—7 to 16 inches; yellowish brown (10YR 5/8) sand; common medium distinct dark brown (10YR 4/3) mottles along root channels; weak medium granular structure; very friable; common fine and medium roots; very strongly acid; gradual wavy boundary.

E2—16 to 30 inches; strong brown (7.5YR 5/8) loamy sand; common fine distinct very pale brown (10YR 7/3) clean sand grains and few fine distinct yellowish red (5YR 5/8) mottles; weak medium granular structure; very friable; common fine and medium roots; very strongly acid; gradual wavy boundary.

E3—30 to 39 inches; yellowish red (5YR 5/6) loamy sand; few fine distinct pink (7.5YR 7/4) mottles; weak medium granular structure; very friable; common fine and medium roots; very strongly acid; gradual wavy boundary.

E4—39 to 46 inches; yellowish red (5YR 5/8) loamy sand; few fine distinct reddish yellow (7.5YR 6/6) mottles; weak medium granular structure; very friable; common fine and few medium roots; strongly acid; gradual wavy boundary.

E5—46 to 51 inches; yellowish red (5YR 5/8) loamy sand; weak medium granular structure; very friable; few fine and medium roots; strongly acid; gradual wavy boundary.

Bt1—51 to 55 inches; red (2.5YR 4/8) fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.

Bt2—55 to 80 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; very strongly acid.

The solum ranges in thickness from 80 to 120 inches or more. The soil is strongly acid or very strongly acid except where lime has been added. In some pedons, a few plinthite nodules are at a depth of more than 70 inches. A few quartzite pebbles are in some pedons.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Thickness ranges from 4 to 8 inches.

The E horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 5 to 8; or it has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is sand or loamy sand. Thickness ranges from 36 to 72 inches.

Some pedons have a BE horizon. It has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. Texture is fine sandy loam or sandy loam. It is up to 6 inches thick.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8; or it has hue of 5YR, 2.5YR, or 10YR, value of 4 or 5, and chroma of 6 or 8. The Bt horizon has less than 5 percent plinthite. Texture is sandy loam, fine sandy loam, or sandy clay loam. Thickness ranges from 20 to 40 inches or more.

Some pedons have a BC horizon. It has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. Texture is sandy loam.

Some pedons have a C horizon that is normally thinly bedded, varicolored sandy and loamy material.

Yemassee Series

The Yemassee series consists of deep, somewhat poorly drained, moderately permeable soils. These soils formed in sandy and loamy fluvial sediment on stream terraces. In most years, the high water table is 12 to 18 inches below the surface for about 2 to 4 months during winter and early in spring. These soils occasionally flood. Slope ranges from 0 to 2 percent. Soils of the Yemassee series are fine-loamy, siliceous, thermic Aeric Ochraquults.

Yemassee soils are associated with the Angie, Bibb, Bigbee, Bonneau, Florala, Garcon, Johnston, Kinston, Leefield, Rutlege, and Stilson soils. Angie and Florala soils do not have contrasting textures within a depth of 40 to 60 inches. Bibb, Johnston, Kinston, and Rutlege soils are wetter than Yemassee soils. Bigbee soils are sandy throughout. Bonneau, Garcon, Leefield, and Stilson soils have surface and subsurface layers 20 to 40 inches thick.

Typical pedon of Yemassee fine sandy loam, occasionally flooded; 1,800 feet north and 500 feet east of the southwest corner of sec. 21, T. 2 N., R. 18 W.

A1—0 to 3 inches; very dark gray (10YR 3/1) fine sandy loam; moderate medium granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.

A2—3 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; common medium faint grayish brown (10YR 5/2) mottles; moderate medium granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.

BA—6 to 11 inches; yellowish brown (10YR 5/4) fine sandy loam; few fine distinct dark grayish brown (10YR 4/2) mottles; weak medium subangular blocky structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

Bt1—11 to 16 inches; yellowish brown (10YR 5/4) sandy clay loam; few fine faint grayish brown mottles and few fine prominent yellowish red (5YR 5/6) mottles; moderate fine subangular blocky structure; friable; few fine roots; sand grains bridges and coated with clay; extremely acid; gradual wavy boundary.

Bt2—16 to 28 inches; light brownish gray (10YR 6/2) sandy clay loam; common medium distinct yellowish brown (10YR 5/4) and strong brown (7.5YR 5/8) mottles and common medium faint grayish brown (10YR 5/2) mottles; moderate fine subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; extremely acid; gradual wavy boundary.

Bt3—28 to 47 inches; gray (10YR 5/1) sandy clay loam; common fine prominent yellowish red (5YR 5/8) mottles and many coarse distinct strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; friable; few fine roots; few mica flakes; extremely acid; gradual wavy boundary.

C—47 to 80 inches, light gray (10YR 6/1) fine sandy loam, small streaks of light gray (10YR 6/1) sand and gray (10YR 5/1) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles; massive; very friable; common mica flakes; extremely acid.

The solum ranges in thickness from 40 to 60 inches and in places from 40 to 70 inches. Reaction is strongly acid to extremely acid throughout except where lime has been added. In many pedons, few to common fine flakes of mica are in the lower part of the Bt horizon and in the C horizon.

The Ap or A horizon has hue of 10YR to 2.5Y, value of 2 to 5, and chroma of 1 or 2. It is 4 to 9 inches thick. Texture is fine sandy loam or loamy sand.

Some pedons have an E horizon. It has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4, and mottles in shades of red, yellow, brown, and gray. Texture is loamy fine sand, loamy sand, fine sandy loam, or sandy loam. The E horizon is up to 11 inches thick.

The BA horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. It has mottles in shades of red, yellow, brown, or gray. This horizon is up to 5 inches thick. Texture is sandy loam or fine sandy loam. Some pedons do not have a BA horizon.

In pedons that do not have a BA horizon, the upper part of the Bt horizon has the same colors as the BA horizon. The Bt horizon of most pedons that have a BA horizon and the lower part of the Bt horizon of most pedons that do not have a BA horizon have hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 4. Common mottles are in shades of yellow, brown, or red. The Bt horizon commonly is sandy clay loam but ranges to clay loam or fine sandy loam in some pedons. Some pedons have subhorizons less than 6 inches thick of sandy clay. Silt content in the control section is less than 30 percent.

Some pedons have a BC horizon. It has hue of 10YR to 2.5Y, value of 5 to 7, and chroma of 1 to 2. Mottles in shades of olive, yellow, brown, or red are common. Texture is dominantly sandy loam or sandy clay loam but ranges to clay loam or sandy clay. Some pedons have strata or pockets of contrasting material.

The C horizon has the same colors as the BC horizon, or it is coarsely mottled in shades of gray, yellow, brown, or red. Texture is variable ranging from sandy to clayey material. Some pedons are stratified, and some pedons have pockets of contrasting material.

Formation of the Soils

In this section the factors of soil formation are discussed and related to the soils in Walton County. In addition, the processes of soil formation are described.

Factors of Soil Formation

Soil is produced by forces of weathering and soil formation acting on the parent material that has been deposited or accumulated by geologic agencies. The kind of soil that forms depends on the climate under which soil material has existed since accumulation, the plant and animal life in and on the soil, the relief or lay of the land, the type of parent material, and the length of time the forces of soil formation have acted on the soil material.

These five factors are interdependent; each modifies the effect of the others. Any one of the five factors can have the greatest influence on the formation of a soil and account for most of its properties. For example, if the parent material is quartz sand, the soil generally has only weakly expressed horizons. The effect of the parent material is modified greatly in some places by the effects of climate, relief, and plants and animals in and on the soil. As a soil forms, it is influenced more than one of the five factors, but in some places all but one factor can have little effect. A modification or variation in any of the factors results in a formation of a different soil.

Climate

The amount of precipitation, the temperature, the humidity, and the wind are the climatic forces that act on parent material of soils. These forces also cause some variation in the plant and animal life on and in the soils, which influences changes in the parent material and in soil formation.

Walton County has a warm and humid climate. The Gulf of Mexico and the Choctawhatchee Bay, together with numerous inland lakes, have a moderating effect on both summer and winter temperatures in the southern part of Walton County, with less effect in the northern part of the county. In the northern part of the county, the ground rarely freezes to a depth of more than a few inches. Summers are long and hot, and temperatures are fairly uniform from year to year and show little day to day variation. Winters are short and mild; however, temperatures vary considerably from day to day. Rainfall averages about 66 inches a year.

Because of the warm temperatures and abundant rainfall, chemical and biological actions are rapid. The abundant rainfall leaches soluble bases, plant nutrients and colloidal material downward. Consequently, most of the soils in this climate have low organic matter content and natural fertility and high acidity.

Plants and Animals

Plants and animals have an important role in the formation of soils. The kinds and numbers of plants and animals that live in and on the soil are governed largely by climate and to lesser and varying degrees by each of the other soil forming factors.

Plants and animals furnish organic matter, mix and stir the soil, and move plant nutrients from the lower to the upper horizons. They also help change soil structure and porosity.

Micro-organisms, including bacteria and fungi, help weather and break down minerals and decompose organic matter. They are most numerous in the upper few inches of the soil. Earthworms and small animals that live in the soil alter the chemical composition and mix the different layers of the soil. Plants also act on the soil chemically and churn it by root penetration.

Relief

Relief has affected the formation of soils in Walton County mainly by its influence on soil-water relationships and its effect on erosion in the northern part of the county. Soils in large, flat areas and depressions are generally poorly drained, and their formation is retarded by accumulated water much of which is received as runoff from adjacent areas. As slope increases, runoff increases in intensity, less water is absorbed to become available to plants, and erosion accelerates. In places, erosion nearly keeps pace with soil formation, and consequently, steep soils are generally shallow and weakly developed. Other factors of soil formation normally associated with relief, such as temperature and plant cover, are of minor importance in the county.

The four general relief areas in the county are the flatwoods, sandhills, rolling uplands, and flood plains. Differences in soils in these areas are directly related to relief. The soils in the flatwoods area have a high water table and are periodically wet at the surface. These soils are not as highly leached as those of the sandhills and the rolling uplands areas. The soils in the sandhills area are deep and sandy, and they are subject to droughtiness. The soils in the rolling uplands area are mostly loamy and clayey, and erosion is a hazard. The soils on flood plains are subject to flooding and prolonged wetness.

Parent Material

The parent material of the soils in Walton County consists of beds of sandy and clayey material that were transported by floodwaters of major streams and by waters of the sea, which covered the area a number of times during the Pleistocene Epoch. During the high stands of the sea, the Mio-Pliocene sediment was eroded from the land and was redeposited or reworked on the shallow sea bottom to form marine terraces. Flood plain sediment from higher lying uplands were also deposited on the marine terraces and in the sea itself to form landmass, or it was reworked and mixed with the marine terrace sediment.

From the surface downward, the county is underlain by the Pleistocene and recent lower marine and Estuarine terrace deposits, then by the Plio-Pleistocene Citronelle Formation. Below that are the Miocene Chipola, Shoal River, and Red Bay Formations; then the Oligocene Duncan Church and Marianna Limestone Formations; and the Eocene Crystal River Formation. The thickness of unconsolidated sediment varies from 25 to 50 feet near Alaqua Creek to over 200 feet on the northern part of Eglin Air Force Base.

The parent material in the survey area differs widely in mineral and chemical composition and in physical properties. The main physical differences, such as those between sand, silt, and clay, can be observed in the field. Differences in mineralogical and chemical composition are important to soil formation and to physical and chemical characteristics of the soils. Many differences among soils in the county appear to reflect differences in the parent material.

Time

Time is an important factor in soil formation. The physical and chemical changes brought about by climate, living organisms, and relief are slow. The length of time needed to convert raw geologic material into soil varies according to the nature of the material and the interaction of the other factors. Some basic minerals from which soils form weather fairly rapidly, but others are chemically inert and show little change over long periods of time. The rate of translocation of fine particles within the soil to form horizons varies under different conditions, but the process always involves relatively long periods of time.

In Walton County, the dominant geological material is inert. The sands are almost pure quartz and are highly resistant to weathering. The finer textured silts and clays are the product of earlier weathering.

In terms of geological time, relatively little time has elapsed since the material in which the soils formed was laid down or emerged from the sea. The loamy and clayey horizons formed in place through processes of clay translocation.

Processes of Soil Formation

The main processes involved in the formation of soil horizons are accumulation of organic matter, leaching of calcium carbonate bases, reduction and transfer of iron, and formation and translocation of silicate clay material. These processes can occur in combination or singularly, depending on the integration of the factors of soil formation.

Most soils in Walton County have four main horizons, the A, E, B, and C. Organic matter has accumulated in the surface layer of all soils in the county to form an A horizon. The content of organic matter varies in different soils and ranges from very low to high because of differences in relief and wetness. The E horizon, or subsurface layer, has the maximum loss of soluble or suspended material. Some soils do not have an E horizon.

The B horizon, or subsoil, lies immediately below the A and E horizon. It is the horizon of maximum accumulation of dissolved or suspended material, such as organic matter, iron, or clay. In some soils, such as Lakeland sand, the B horizon has not yet developed.

The C horizon is the substratum. It has been affected very little by the soil forming processes, but it may be somewhat modified by weathering.

The chemical reduction and transfer of iron, called gleying, is evident in the wet soils of the county. Gleying, shown by gray color in the subsoil and gray mottles in other horizons, indicates the reduction and loss of iron. In some sandy soils, the clean sand grains are gray and the color has no relation to gleying. Some soils, such as the Tifton soils, have reddish brown mottles and concretions, indicating a segregation of iron.

Leaching of carbonates and bases has occurred in all of the productive soils of the county. This contributes to the formation of the horizons and to the inherent poor fertility of these soils.

References

(1) American Association of State Highway and Transportation Officials. 1982. Standard specifications for highway materials and methods of sampling and testing. Ed. 13, 2 vol., illus.

(2) American Society for Testing and Materials. 1985. Standard test method for classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Applequist, M.H. 1959. Soil-site studies of southern hardwoods. In southern forest soils—Eighth annual forestry symposium. La. State Univ.

(4) Bouyoucos, G.J. 1962. Hydrometer method improved for making particle size analyses of soils. Agron. J. 54: 464-465.

(5) Broadfoot, W.M. and R.M. Krinard, 1959. Guide for evaluating sweetgum sites. U.S. Dep. Agr., Forest Serv., South. Forest Exp. Stn. Occas. Pap. 176, 8 pp., illus.

(6) Broadfoot, W.M. 1963. Guide for evaluating water oak sites. U.S. Dep. Agric., Forest Serv., South. Forest Exp. Stn. Res. Pap. SO-1, 8 pp., illus.

(7) Coile, T.S. and F.X. Schumacher. 1953. Site index of young stands of loblolly and shortleaf pines in the Piedmont Plateau Region. J. For. 51: 432-435, illus.

(8) Cooke, C. Wythe. 1939. Scenery of Florida interpreted by a geologist. Fla. Geol. Surv. Bull. 17. 118 pp.

(9) Healy, H.G. 1975. Terraces and shorelines of Florida. Fla. Bur. Geol. Map Series 71.

(10) MacNeil, F.S. 1949. Pleistocene shorelines in Florida and Georgia. U.S. Geol. Surv. Prof. Paper 221-F. pp 95-107.

(11) Marsh, Owen T. 1966. Geology of Escambia and Santa Rosa Counties, western Florida Panhandle. Fla. State Dept. of Conserv. and Fla. Geol. Survey. Geol. Bull. 46. 140 pp., illus.

(12) Pascale, Charles A. 1974. Water resources of Walton County, Florida. Fla. State Dept., National Resources, Report of Investigations No. 76. 65 pp., illus.

(13) Puri, Harbans S. and Robert O. Vernon. 1964. Summary of the geology of Florida and a guidebook to the classic exposures. Fla. Geol. Sur. Spec. Pub. 5 revised. 312 pp.

(14) Schmidt, Walter, and Clark, Wiggs, Murlene. 1980. Geology of Bay County, Florida. Fla. Bur. of Geol. Bull. 57. 96 pp.

(15) Schumacher, F.X. and T.S. Coile. 1960. Growth and yield of natural stands of the southern pines.

(16) Sellards, E.H. and H. Gunter. 1918. Geology between the Apalachicola and Ocklocknee Rivers in Florida. Fla. Geol. Surv. Tenth Ann. Rep. pp. 9-56.

(17) United States Department of Agriculture. 1929. Volume, yield, and stand tables for second growth southern pines. Forrest Serv. Misc. Publ. 50.

(18) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. (Supplements replacing pp. 173-188 issued May 1962.)

(19) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

(20) United States Department of Agriculture. 1984. Procedures for collecting soil samples and methods of analysis for soil survey. Soil Surv. Invest. Rep. 1, 68 pp., illus.

(21) United States Department of Agriculture. 1985. Site curves and yield of second growth baldcypress. Soil Conserv. Serv. Tech. Note No. 5.

(22) United States Department of Commerce. 1972. Climate of the states: Florida. Climatography of the U.S. No. 60-8, 31 pp., illus.

(23) Vernon, Robert O. 1942. Geology of Holmes and Washington Counties, Florida. Fla. Geol. Surv. Bull. 21. 161 pp.

(24) Vernon, Robert O. 1951. Geology of Citrus and Levy Counties, Florida. Fla. Geol. Sur. Bull. 33. 256 pp.

(25) Walton County Chamber of Commerce. 1977-78. Know Walton County Florida. 30 pp., illus.

(26) Winker, Charles D. and James D. Howard. 1977. Correlation of tectonically deformed shorelines on the south Atlantic coastal plain. Geol. Vol. 5. pp. 123-127.

Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches of water per inch of soil
Very low	less than 0.05
Low	0.05 to 0.10
Moderate	0.10 to 0.15
High	0.15 to 0.20
Very high	more than 0.20

The capacity in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bottom land. The normal flood plain of a stream, subject to flooding.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels, i.e., clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). The volume of soft soil decreases excessively under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, such as fire, that exposes the surface.

Excess salts (in tables). Excess water-soluble salts in the soil restrict the growth of most plants.

Excess sulfur (in tables). An excessive amount of sulfur is in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Fast intake (in tables). The movement of water into the soil is rapid.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group

D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). In these areas, surface or subsurface drainage outlets are difficult or expensive to install.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called groundwater runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage (in tables). The movement of water through the soil adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Data recorded in the period 1896-1952 by U.S. Weather Bureau Cooperative Observers at DeFuniak Springs, Florida]

Month	Temperature					Precipitation	
				Mean number of days with temperatures of--			Mean number of days with rainfall of--
	Normal monthly mean	Normal daily maximum	Normal daily minimum	90 °F or higher	32 °F or lower	Normal total	0.10 inch or more
	°F	°F	°F			In	
January----	64.3	42.3	53.3	0	5	4.49	8
February---	66.1	43.6	54.9	0	4	5.41	8
March------	72.7	49.5	61.1	*	1	6.12	8
April------	79.3	55.0	67.2	1	*	4.82	6
May--------	86.8	62.7	74.8	14	0	4.61	8
June-------	91.3	69.0	80.2	23	0	6.00	11
July-------	91.2	70.9	81.1	22	0	8.87	16
August-----	91.4	70.8	81.1	25	0	8.31	16
September--	88.3	67.5	77.9	13	0	5.84	10
October----	84.0	57.4	70.7	3	*	2.89	5
November---	71.2	47.3	59.3	0	2	3.80	6
December---	66.8	41.9	54.4	0	4	4.88	8
Total----	79.5	56.5	68.0	101	16	66.04	110

*Less than half a day.

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Data recorded in the period 1925-61
at DeFuniak Springs, Florida]

Chance*	Spring temperature of--		Fall temperature of--	
	32 °F after--	28 °F after--	32 °F before--	28 °F before--
1 year in 10--	March 26	March 13	November 4	November 17
2 years in 10--	March 17	March 3	November 10	November 21
3 years in 10--	March 11	February 24	November 14	November 25
4 years in 10--	March 5	February 18	November 18	November 29
5 years in 10--	February 28	February 13	November 21	December 3
6 years in 10--	February 23	February 8	November 25	December 10
7 years in 10--	February 18	January 31	November 29	December 20
8 years in 10--	February 11	January 23	December 3	December 30
9 years in 10--	February 2	January 13	December 9	January 10

* Chance that there will be temperatures of 32 °F or lower and 28 °F or lower in spring after date indicated and in fall before date indicated.

TABLE 3.--FREEZE DATA

[Based on data recorded at DeFuniak Springs, Florida]

Freeze threshold temperature	Mean date of late spring occurrence	Mean date of first fall occurrence	Mean number of days between dates	Years of record spring	Number of occurrences in spring	Years of record fall	Number of occurrences in fall
°F							
32	02-26	11-25	272	30	29	29	27
28	02-16	12-10	297	30	29	29	21
24	01-26	12-19	327	30	19	29	13
20	01-10	12-27	351	30	12	29	8
16	01-04	0	0	30	6	29	1

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
1	Albany-Pactolus loamy sands, 0 to 5 percent slopes	7,342	1.1
2	Bonifay loamy sand, 0 to 5 percent slopes	21,231	3.2
3	Bonifay loamy sand, 5 to 8 percent slopes	2,685	0.4
4	Chipley sand, 0 to 5 percent slopes	11,346	1.7
5	Chipley sand, 5 to 8 percent slopes	714	0.1
6	Escambia sandy loam, 2 to 5 percent slopes	1,103	0.2
8	Dorovan-Pamlico association, frequently flooded	42,519	6.4
9	Dothan loamy sand, 0 to 2 percent slopes	860	0.1
10	Dothan loamy sand, 2 to 5 percent slopes	21,798	3.3
11	Dothan loamy sand, 5 to 8 percent slopes	2,385	0.4
12	Foxworth sand, 0 to 5 percent slopes	15,802	2.4
13	Fuquay loamy sand, 0 to 5 percent slopes	24,735	3.7
14	Fuquay loamy sand, 5 to 8 percent slopes	4,295	0.6
15	Kinston-Johnston-Bibb complex, frequently flooded	38,704	5.8
16	Kureb sand, 0 to 8 percent slopes	4,550	0.7
17	Lakeland sand, 0 to 5 percent slopes	150,581	22.5
18	Lakeland sand, 5 to 12 percent slopes	16,149	2.4
19	Lakeland sand, 12 to 30 percent slopes	4,089	0.6
20	Leefield-Stilson loamy sands, 0 to 5 percent slopes	15,258	2.3
21	Leon sand	12,931	1.9
22	Lucy loamy sand, 0 to 5 percent slopes	5,550	0.8
23	Lucy loamy sand, 5 to 8 percent slopes	1,071	0.2
25	Orangeburg sandy loam, 1 to 5 percent slopes	6,962	1.0
26	Orangeburg sandy loam, 5 to 8 percent slopes	2,122	0.3
27	Rutlege fine sand	24,562	3.7
28	Tifton fine sandy loam, 0 to 2 percent slopes	170	*
29	Tifton fine sandy loam, 2 to 5 percent slopes	1,335	0.2
30	Tifton fine sandy loam, 5 to 8 percent slopes	294	*
31	Troup sand, 0 to 5 percent slopes	33,392	5.0
32	Troup sand, 5 to 8 percent slopes	9,359	1.4
33	Troup sand, 8 to 12 percent slopes	8,208	1.2
34	Troup sand, 12 to 25 percent slopes	1,956	0.3
35	Troup-Orangeburg-Cowarts loamy sands, 5 to 12 percent slopes	12,154	1.8
36	Pits	1,262	0.2
37	Angie sandy loam, 2 to 5 percent slopes	1,987	0.3
38	Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes	19,662	2.9
39	Pantego loam, depressional	6,904	1.0
40	Escambia sandy loam, 0 to 2 percent slopes	438	0.1
41	Maurepas muck, frequently flooded	13,476	2.0
42	Blanton sand, 0 to 5 percent slopes	5,807	0.9
43	Kinston-Bibb association, frequently flooded	9,012	1.3
44	Lakeland-Troup-Urban land complex, 0 to 5 percent slopes	1,080	0.2
45	Dirego muck, frequently flooded	2,256	0.3
46	Norfolk loamy sand, 2 to 5 percent slopes	7,727	1.2
47	Bonneau loamy sand, 0 to 5 percent slopes	10,675	1.6
48	Yemassee-Garcon-Bigbee complex, occasionally flooded	4,878	0.7
49	Eglin sand, 0 to 5 percent slopes	2,012	0.3
50	Mandarin sand	2,315	0.3
51	Bigbee loamy sand, 0 to 5 percent slopes, occasionally flooded	419	0.1
52	Yemassee fine sandy loam, occasionally flooded	167	*
53	Arents, 2 to 8 percent slopes	1,310	0.2
54	Newhan-Corolla sands, rolling	937	0.1
55	Beaches	456	0.1
56	Kureb sand, hilly	125	*
57	Hurricane sand, 0 to 5 percent slopes	14,566	2.2
58	Duckston muck, frequently flooded	973	0.1
59	Malbis fine sandy loam, 0 to 2 percent slopes	727	0.1
60	Malbis fine sandy loam, 2 to 5 percent slopes	13,136	2.0
61	Malbis fine sandy loam, 5 to 8 percent slopes	2,055	0.3
62	Resota sand, 0 to 5 percent slopes	1,155	0.2
63	Pickney sand, depressional	1,801	0.3
64	Pamlico muck	4,938	0.7

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
65	Garcon loamy fine sand, occasionally flooded	3,355	0.5
66	Kenansville loamy fine sand, 0 to 5 percent slopes	2,404	0.4
68	Florala loamy fine sand, 0 to 2 percent slopes	1,476	0.2
69	Florala loamy fine sand, 2 to 5 percent slopes	5,892	0.9
70	Shubuta fine sandy loam, 2 to 5 percent slopes	3,578	0.5
71	Shubuta fine sandy loam, 5 to 12 percent slopes	3,587	0.5
72	Osier fine sand	5,258	0.8
73	Albany loamy sand	2,160	0.3
	Water <40 acres	2,592	0.4
	Total	668,770	100.0

* Less than 0.1 percent.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Land capability	Corn	Peanuts	Soybeans	Cotton	Wheat	Oats	Bahiagrass
		Bu	Lbs	Bu	Lbs	Bu	Bu	AUM*
1---------------- Albany-Pactolus	IIIe	60	1,700	25	480	30	51	7.0
2---------------- Bonifay	IIIs	60	1,700	25	500	27	45	7.2
3---------------- Bonifay	IVs	55	1,600	24	450	25	39	7.2
4---------------- Chipley	IIIs	50	1,700	20	400	23	39	7.0
5---------------- Chipley	IVs	45	1,700	15	400	23	39	7.5
6---------------- Escambia	IIe	100	2,900	40	800	42	77	8.0
8:								
Dorovan---------	VIIw	---	---	---	---	---	---	---
Pamlico---------	VIIw	---	---	---	---	---	---	---
9---------------- Dothan	I	120	3,500	48	950	50	90	9
10--------------- Dothan	IIe	120	3,400	48	950	50	90	9
11--------------- Dothan	IIIe	100	2,900	38	800	42	77	8
12--------------- Foxworth	IIIs	60	1,700	25	500	27	45	7.2
13--------------- Fuquay	IIs	85	2,500	34	650	34	64	8.0
14--------------- Fuquay	IIIs	75	2,100	30	600	31	58	7.5
15--------------- Kinston- Johnston-Bibb	VIIw	---	---	---	---	---	---	---
16--------------- Kureb	VIIs	---	---	---	---	---	---	3.5
17--------------- Lakeland	IVs	55	1,600	20	450	25	32	7.0
18--------------- Lakeland	VIs	---	---	---	---	---	---	6.5
19--------------- Lakeland	VIIs	---	---	---	---	---	---	6.0

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Peanuts	Soybeans	Cotton	Wheat	Oats	Bahiagrass
		Bu	Lbs	Bu	Lbs	Bu	Bu	AUM*
20--------------- Leefield- Stilson	IIw	85	2,900	35	600	34	64	9.0
21--------------- Leon	IVw	50	1,400	20	400	23	39	7.5
22--------------- Lucy	IIs	85	2,600	34	650	34	64	8.0
23--------------- Lucy	IIIs	75	2,100	30	600	31	58	7.5
25--------------- Orangeburg	IIe	120	3,500	48	950	50	90	9.0
26--------------- Orangeburg	IIIe	100	2,900	38	800	42	77	8.0
27--------------- Rutlege	VIw	---	---	---	---	---	---	4.5
28--------------- Tifton	I	115	3,400	46	900	45	84	8.5
29--------------- Tifton	IIe	115	3,300	46	900	45	84	8.5
30--------------- Tifton	IIIe	90	2,600	34	750	38	71	8.0
31--------------- Troup	IIIs	60	1,700	25	500	27	45	7.2
32--------------- Troup	IVs	55	1,600	22	450	25	39	7.0
33--------------- Troup	VIs	---	---	---	---	---	---	6.5
34--------------- Troup	VIIs	---	---	---	---	---	---	5.0
35--------------- Troup- Orangeburg- Cowarts	VIs	---	---	---	---	---	---	6.5
36. Pits								
37--------------- Angie	IIIe	80	2,300	30	650	34	64	8.0
38--------------- Bonneau- Norfolk-Angie	IVe	45	1,200	15	350	20	32	6.5
39--------------- Pantego	VIw	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Peanuts	Soybeans	Cotton	Wheat	Oats	Bahiagrass
		Bu	Lbs	Bu	Lbs	Bu	Bu	AUM*
40-------------- Escambia	IIw	100	3,000	40	800	42	77	10.0
41-------------- Maurepas	VIIIw	---	---	---	---	---	---	---
42-------------- Blanton	IIIs	60	1,700	25	500	27	45	7.2
43:								
Kinston--------	VIw	---	---	---	---	---	---	7.0
Bibb-----------	Vw	---	---	---	---	---	---	6.0
44. Lakeland-Troup- Urban land								
45-------------- Dirego	VIIIw	---	---	---	---	---	---	---
46-------------- Norfolk	IIe	100	2,900	40	800	42	77	8.0
47-------------- Bonneau	IIs	85	2,400	34	700	38	64	8.0
48-------------- Yemassee- Garcon-Bigbee	IIw	75	2,100	30	650	34	58	8.0
49-------------- Eglin	IVs	55	1,600	20	450	25	32	7.0
50-------------- Mandarin	VIs	---	---	---	---	---	---	6.0
51-------------- Bigbee	IIIs	50	1,400	20	400	23	39	7.0
52-------------- Yemassee	IIw	100	3,000	45	800	42	77	10.0
53-------------- Arents	VIIs	---	---	---	---	---	---	---
54-------------- Newhan-Corolla	VIIIs	---	---	---	---	---	---	---
55-------------- Beaches	VIIIw	---	---	---	---	---	---	---
56-------------- Kureb	VIIs	---	---	---	---	---	---	---
57-------------- Hurricane	IIIw	50	1,700	20	400	23	39	7.0
58-------------- Duckston	VIIw	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Peanuts	Soybeans	Cotton	Wheat	Oats	Bahiagrass
		Bu	Lbs	Bu	Lbs	Bu	Bu	AUM*
59-------------- Malbis	I	120	3,500	48	950	50	90	9.0
60-------------- Malbis	IIe	120	3,400	48	950	50	90	9.0
61-------------- Malbis	IIIe	100	2,900	38	800	42	77	8.0
62-------------- Resota	VIs	---	---	---	---	---	---	5.0
63-------------- Pickney	VIw	---	---	---	---	---	---	7.0
64-------------- Pamlico	VIIw	---	---	---	---	---	---	---
65-------------- Garcon	IIw	70	1,900	28	600	30	51	7.5
66-------------- Kenansville	IIs	85	2,600	34	600	34	64	8.0
68-------------- Florala	IIw	100	3,000	40	800	42	77	10.0
69-------------- Florala	IIe	100	2,900	40	800	42	77	8.0
70-------------- Shubuta	IIe	100	2,900	40	800	42	77	8.0
71-------------- Shubuta	IVe	55	1,700	20	400	23	39	7.0
72-------------- Osier	Vw	---	---	---	---	---	---	5.0
73-------------- Albany	IIIw	60	1,900	25	400	23	39	7.2

* Animal-unit-month: The amount of forage or feed required to feed one animal unit [one cow, one horse, one mule, five sheep, or five goats] for 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	1,757	---	---	---
II	130,467	61,531	25,572	43,364
III	126,274	16,185	16,726	93,363
IV	201,531	23,249	12,931	165,351
V	9,313	---	9,313	---
VI	78,205	---	38,224	39,981
VII	99,164	---	87,134	12,030
VIII	17,125	---	16,188	937

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
1:										
Albany-------------	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	90	9	
							Longleaf pine-------	80	7	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	
Pactolus-----------	10W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	10	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	80	8	
							Longleaf pine-------	70	6	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	
2, 3--------------- Bonifay	10S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	10	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine-------	70	6	
							Loblolly pine-------	80	8	
							Post oak------------	---	--	
							Blackjack oak-------	---	--	
							Turkey oak----------	---	--	
4, 5--------------- Chipley	11S	Slight	Moderate	Slight	Slight	Moderate	Slash pine----------	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	85	8	
							Longleaf pine-------	80	7	
							Post oak------------	---	--	
							Turkey oak----------	---	--	
							Blackjack oak-------	---	--	
6------------------ Escambia	11W	Slight	Moderate	Slight	Moderate	Slight	Slash pine----------	90	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine-------	90	9	
							Longleaf pine-------	80	7	
							Live oak------------	---	---	
							Water oak-----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
8:										
Dorovan	7W	Slight	Severe	Severe	Severe	Severe	Baldcypress	108	7	2/
							Blackgum	70	7	
							Sweetbay	---	---	
							Swamp tupelo	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
Pamlico	7W	Slight	Severe	Severe	Severe	Severe	Baldcypress	108	7	2/
							Water tupelo	---	---	
							Blackgum	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
							Sweetbay	---	---	
9, 10, 11 Dothan	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine	90	11	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine	80	7	
							Loblolly pine	85	8	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Magnolia	---	---	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Water oak	---	---	
12 Foxworth	10S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	80	8	
							Longleaf pine	65	5	
							Turkey oak	---	---	
							Live oak	---	---	
							Post oak	---	---	
							Bluejack oak	---	---	
							Flowering dogwood	---	---	
13, 14 Fuquay	11S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	90	10	Slash pine, longleaf pine, loblolly pine.
							Loblolly pine	85	8	
							Longleaf pine	70	5	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Magnolia	---	---	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Water oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
15: Kinston	9W	Slight	Severe	Severe	Moderate	Severe	Loblolly pine	100	9	Loblolly pine, slash pine 3/, white-cedar.
							Sweetgum	95	8	
							White-cedar	---	---	
							Laurel oak	---	---	
							Red maple	---	---	
							Sweetbay	---	---	
Johnston	7W	Slight	Severe	Severe	Severe	Severe	Baldcypress	108	7	Loblolly pine 3/.
							Water tupelo	---	---	
							Swamp tupelo	---	---	
							Water oak	---	---	
							Red maple	---	---	
							Sweetbay	---	---	
Bibb	9W	Slight	Severe	Severe	Severe	Severe	Loblolly pine	100	9	Loblolly pine 3/.
							Sweetgum	90	7	
							Water oak	90	6	
							White-cedar	---	---	
							Blackgum	---	---	
							Laurel oak	---	---	
							Red maple	---	---	
							Sweetbay	---	---	
16 Kureb	3S	Slight	Severe	Severe	Slight	Slight	Sand pine	60	3	Sand pine 4/.
							Longleaf pine	50	3	
							Bluejack oak	---	---	
							Turkey oak	---	---	
17, 18, 19 Lakeland	9S	Slight	Moderate	Moderate	Slight	Slight	Slash pine	75	9	Loblolly pine, longleaf pine.
							Sand pine	80	5	
							Loblolly pine	75	7	
							Longleaf pine	65	5	
							Turkey oak	---	---	
							Post oak	---	---	
							Sand live oak	---	---	
20: Leefield	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine	85	8	
							Longleaf pine	70	6	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Magnolia	---	---	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Water oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
20: Stilson	11W	Slight	Moderate	Slight	Slight	Moderate	Slash pine	90	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	90	9	
							Longleaf pine	80	7	
							Sweetgum	---	---	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Magnolia	---	---	
							Southern red oak	---	---	
							Water oak	---	---	
21 Leon	7W	Slight	Moderate	Moderate	Moderate	Moderate	Loblolly pine	75	7	Loblolly pine, slash pine.
							Slash pine	70	8	
							Longleaf pine	65	5	
							Live oak	---	---	
							Water oak	---	---	
22, 23 Lucy	11S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Slash pine, longleaf pine, loblolly pine.
							Longleaf pine	70	6	
							Loblolly pine	80	8	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Southern red oak	---	---	
							White oak	---	---	
25, 26 Orangeburg	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	80	8	
							Longleaf pine	75	6	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Water oak	---	---	
27 Rutlege	9W	Slight	Severe	Severe	Slight	Severe	Slash pine	75	9	Loblolly pine, slash pine. [3]
							Loblolly pine	80	8	
							Sweetgum	90	7	
							Laurel oak	---	---	
							Red maple	---	---	
							Sweetbay	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
28, 29, 30 Tifton	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	85	9	
							Longleaf pine	72	6	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Magnolia	---	---	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Water oak	---	---	
31, 32, 33 Troup	10S	Slight	Slight	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	75	7	
							Longleaf pine	75	6	
							Blackjack oak	---	---	
							Bluejack oak	---	---	
							Post oak	---	---	
							Turkey oak	---	---	
34 Troup	10S	Moderate	Moderate	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	75	7	
							Longleaf pine	75	6	
							Bluejack oak	---	---	
							Post oak	---	---	
							Turkey oak	---	---	
35: Troup	10S	Slight	Slight	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	75	7	
							Longleaf pine	75	6	
							Bluejack oak	---	---	
							Post oak	---	---	
							Turkey oak	---	---	
Orangeburg	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine	90	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	85	8	
							Longleaf pine	80	7	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Water oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi-nation symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Plant competi-tion	Common trees	Site index	Produc-tivity class[1]	
35: Cowarts-----------	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine----------	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	85	8	
							Longleaf pine-------	67	6	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	
37----------------- Angie	11W	Slight	Moderate	Slight	Slight	Moderate	Slash pine----------	90	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine-------	85	8	
							Longleaf pine-------	70	6	
							Sweetgum------------	95	8	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Water oak-----------	---	---	
38: Bonneau-----------	11S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	80	8	
							Longleaf pine-------	75	6	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Water oak-----------	---	---	
Norfolk-----------	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine----------	85	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine-------	90	9	
							Longleaf pine-------	70	6	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
38: Angie	11W	Slight	Moderate	Slight	Slight	Moderate	Slash pine	90	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine	85	8	
							Longleaf pine	70	6	
							Sweetgum	95	8	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Magnolia	---	---	
							Southern red oak	---	---	
							Water oak	---	---	
							Florida maple	---	---	
39 Pantego	7W	Slight	Severe	Severe	Severe	Severe	Baldcypress	108	7	Loblolly pine, slash pine 2/ 3/, baldcypress.
							Water tupelo	---	---	
							Water oak	---	---	
							Blackgum	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
							Sweetbay	---	---	
40 Escambia	11W	Slight	Moderate	Slight	Moderate	Slight	Slash pine	85	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine	90	9	
							Longleaf pine	75	6	
							Sweetgum	90	7	
							Beech	---	---	
							Black cherry	---	---	
							Hickory	---	---	
							Magnolia	---	---	
							Southern red oak	---	---	
							Water oak	---	---	
41 Maurepas	6W	Slight	Severe	Severe	Severe	Severe	Baldcypress	100	6	2/
							Blackgum	---	---	
							Water tupelo	---	---	
							Carolina ash	---	---	
							Red maple	---	---	
							Sweetbay	---	---	
							Sweetgum	---	---	
42 Blanton	11S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine	80	8	
							Longleaf pine	70	6	
							Bluejack oak	---	---	
							Turkey oak	---	---	
							Southern red oak	---	---	
							Live oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
43: Kinston-----------	11W	Slight	Severe	Severe	Moderate	Severe	Loblolly pine-------	100	11	Loblolly pine, slash pine 3/.
							Sweetgum-----------	95	8	
							Laurel oak----------	---	---	
							Red maple-----------	---	---	
							Sweetbay------------	---	---	
Bibb--------------	9W	Slight	Severe	Severe	Severe	Severe	Loblolly pine-------	90	9	Loblolly pine 3/.
							Sweetgum------------	90	7	
							Water oak-----------	90	---	
							Blackgum------------	---	---	
							Laurel oak----------	---	---	
							Red Maple-----------	---	---	
							Sweetbay------------	---	---	
46----------------- Norfolk	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine----------	85	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine-------	90	9	
							Longleaf pine-------	70	6	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	
47----------------- Bonneau	10S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	83	10	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine-------	86	9	
							Longleaf pine-------	75	6	
							Hickory-------------	---	---	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	
48: Yemassee----------	11W	Slight	Moderate	Slight	Slight	Moderate	Slash pine----------	85	11	Slash pine, loblolly pine.
							Loblolly pine-------	90	8	
							Longleaf pine-------	70	6	
							Sweetgum------------	95	8	
							Southern red oak----	---	---	
							Blackgum------------	---	---	
							Hickory-------------	---	---	
							Laurel oak----------	---	---	
							Water oak-----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
48: Garcon	10W	Slight	Slight	Moderate	Slight	Moderate	Slash pine	80	10	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine	70	6	
							Loblolly pine	75	7	
							Sweetgum	90	7	
							Laurel oak	---	---	
							Water oak	---	---	
Bigbee	10S	Slight	Slight	Moderate	Slight	Slight	Slash pine	80	10	Loblolly pine, slash pine.
							Loblolly pine	85	8	
							Southern red oak	---	---	
							Laurel oak	---	---	
49 Eglin	5S	Slight	Moderate	Moderate	Slight	Slight	Longleaf pine	65	5	Longleaf pine, sand pine.
							Sand pine	60	3	
							Slash pine	45	4	
							Turkey oak	---	---	
							Live oak	---	---	
							Laurel oak	---	---	
							Bluejack oak	---	---	
50 Mandarin	8S	Slight	Moderate	Severe	Slight	Moderate	Slash pine	70	8	Slash pine, loblolly pine.
							Longleaf pine	60	4	
							Loblolly pine	70	7	
							Live oak	---	---	
51 Bigbee	10S	Slight	Slight	Moderate	Slight	Slight	Slash pine	80	10	Loblolly pine, slash pine.
							Loblolly pine	85	8	
							Southern red oak	---	---	
							Laurel oak	---	---	
52 Yemassee	11W	Slight	Moderate	Slight	Slight	Moderate	Slash pine	85	11	Slash pine, loblolly pine.
							Loblolly pine	85	8	
							Longleaf pine	70	6	
							Sweetgum	95	8	
							Southern red oak	---	---	
							Blackgum	---	---	
							Hickory	---	---	
							Laurel oak	---	---	
							Water oak	---	---	
56 Kureb	3S	Slight	Severe	Severe	Slight	Slight	Sand pine	60	3	Sand pine.
							Longleaf pine	55	3	
							Bluejack oak	---	---	
							Turkey oak	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class[1]	
57----------------- Hurricane	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	85	11	Slash pine, longleaf pine.
							Longleaf pine-------	75	6	
							Loblolly pine-------	90	9	
							Blackjack oak-------	---	---	
							Post oak------------	---	---	
							Turkey oak----------	---	---	
59, 60, 61--------- Malbis	11A	Slight	Slight	Slight	Slight	Moderate	Slash pine----------	90	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	90	9	
							Longleaf pine-------	80	7	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	
62----------------- Resota	4S	Slight	Moderate	Severe	Slight	Moderate	Sand pine-----------	70	4	Sand pine 4/.
							Slash pine----------	65	8	
							Longleaf pine-------	65	5	
							Sand live oak-------	---	---	
63----------------- Pickney	7W	Slight	Severe	Severe	Moderate	Severe	Baldcypress---------	108	7	Baldcypress.
							Blackgum------------	---	---	
							Carolina ash--------	---	---	
							Red maple-----------	---	---	
							Sweetbay------------	---	---	
							Water tupelo--------	---	---	
64----------------- Pamlico	7W	Slight	Severe	Severe	Severe	Severe	Baldcypress---------	108	7	2/
							Water tupelo--------	---	---	
							Blackgum------------	---	---	
							Carolina ash--------	---	---	
							Red maple-----------	---	---	
							Sweetbay------------	---	---	
65----------------- Garcon	10W	Slight	Slight	Moderate	Slight	Moderate	Slash pine----------	80	10	Slash pine, loblolly pine, longleaf pine.
							Longleaf pine-------	70	6	
							Sweetgum------------	90	7	
							Laurel oak----------	---	---	
							Water oak-----------	---	---	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
66----------------- Kenansville	10S	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	80	10	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine-------	80	8	
							Longleaf pine-------	65	5	
							Sweetgum------------	---	---	
							Hickory-------------	---	---	
68, 69------------- Florala	11W	Slight	Moderate	Slight	Slight	Moderate	Slash pine----------	85	11	Loblolly pine, slash pine, longleaf pine.
							Loblolly pine-------	90	9	
							Longleaf pine-------	80	7	
							Sweetgum------------	90	7	
							Water oak-----------	90	6	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
70, 71------------- Shubuta	10C	Slight	Moderate	Slight	Slight	Slight	Slash pine----------	80	10	Loblolly pine, slash pine.
							Loblolly pine-------	85	8	
							Longleaf pine-------	65	5	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Southern red oak----	---	---	
							Water oak-----------	---	---	
72----------------- Osier	10W	Slight	Severe	Severe	Moderate	Severe	Slash pine----------	80	10	Slash pine, loblolly pine.
							Loblolly pine-------	85	8	
							Longleaf pine-------	60	4	
							Sweetgum------------	---	---	
							Laurel oak----------	---	---	
							Sweetbay------------	---	---	
							Water oak-----------	---	---	
73----------------- Albany	11W	Slight	Moderate	Moderate	Slight	Moderate	Slash pine----------	85	11	Slash pine, loblolly pine, longleaf pine.
							Loblolly pine-------	90	9	
							Longleaf pine-------	80	7	
							Beech---------------	---	---	
							Black cherry--------	---	---	
							Hickory-------------	---	---	
							Magnolia------------	---	---	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
							Water oak-----------	---	---	

1/ Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

2/ Generally not suited to the production of pine trees because of ponding or extended wetness; may be suited to baldcypress and hardwood production through natural regeneration.

3/ Planting of pine trees is feasible only where surface drainage is adequate.

4/ Slash and longleaf pines are not listed because of difficulty in establishing seedlings.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1:					
Albany	Severe: flooding, wetness.	Moderate: wetness, too sandy.	Severe: wetness.	Moderate: wetness, too sandy.	Severe: droughty.
Pactolus	Severe: flooding.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness, droughty.
2 Bonifay	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
3 Bonifay	Slight	Slight	Severe: slope.	Slight	Moderate: droughty.
4 Chipley	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
5 Chipley	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Severe: droughty.
6 Escambia	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
8:					
Dorovan	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
Pamlico	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
9 Dothan	Slight	Slight	Slight	Slight	Moderate: droughty.
10 Dothan	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
11 Dothan	Slight	Slight	Severe: slope.	Slight	Moderate: droughty.
12 Foxworth	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
13 Fuquay	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
14 Fuquay	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
15:					
Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Johnston	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
16 Kureb	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
17 Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
18 Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope, too sandy.
19 Lakeland	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.
20:					
Leefield	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Stilson	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
21 Leon	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
22 Lucy	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
23 Lucy	Slight	Slight	Severe: slope.	Slight	Moderate: droughty.
25 Orangeburg	Slight	Slight	Moderate: slope.	Slight	Slight.
26 Orangeburg	Slight	Slight	Severe: slope.	Slight	Slight.
27 Rutlege	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
28 Tifton	Slight	Slight	Moderate: small stones.	Slight	Slight.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
29 Tifton	Slight	Slight	Moderate: slope.	Slight	Slight.
30 Tifton	Slight	Slight	Severe: slope.	Slight	Slight.
31 Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
32 Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty.
33 Troup	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope.
34 Troup	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: slope.
35:					
Troup	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Orangeburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Cowarts	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
36. Pits					
37 Angie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
38:					
Bonneau	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Norfolk	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Angie	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
39 Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
40 Escambia	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
41 Maurepas	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
42 Blanton	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
43: Kinston	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Bibb	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
44: Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
Troup	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
Urban land.					
45 Dirego	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, excess salt.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: excess salt, excess sulfur, wetness.
46 Norfolk	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
47 Bonneau	Slight	Slight	Slight	Slight	Moderate: droughty.
48: Yemassee	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty, flooding.
Garcon	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, droughty, flooding.
Bigbee	Severe: flooding.	Moderate: too sandy.	Moderate: too sandy, flooding.	Moderate: too sandy.	Moderate: droughty, flooding.
49 Eglin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
50 Mandarin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: wetness, droughty, too sandy.
51 Bigbee	Severe: flooding.	Moderate: too sandy.	Moderate: too sandy, flooding.	Moderate: too sandy.	Moderate: droughty, flooding.
52 Yemassee	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: flooding, wetness.
53 Arents	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
54:					
Newhan	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty, slope.
Corolla	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
55. Beaches					
56 Kureb	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty, slope.
57 Hurricane	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
58 Duckston	Severe: flooding, wetness, too sandy.	Severe: too sandy.	Severe: too sandy, wetness, flooding.	Severe: too sandy.	Severe: droughty, flooding.
59 Malbis	Slight	Slight	Slight	Slight	Slight.
60 Malbis	Slight	Slight	Moderate: slope.	Slight	Slight.
61 Malbis	Slight	Slight	Severe: slope.	Slight	Slight.
62 Resota	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
63 Pickney	Severe: ponding, too sandy.	Severe: ponding, too sandy.	Severe: too sandy, ponding.	Severe: too sandy, ponding.	Severe: ponding.
64 Pamlico	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
65 Garcon	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, droughty, flooding.
66 Kenansville	Severe: flooding.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
68 Florala	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
69 Florala	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
70 Shubuta	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
71 Shubuta	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
72 Osier	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness, droughty.
73 Albany	Severe: wetness.	Moderate: wetness, too sandy.	Severe: wetness.	Moderate: wetness, too sandy.	Severe: droughty.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
1:										
Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.
Pactolus	Fair	Fair	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
2, 3 Bonifay	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
4 Chipley	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
5 Chipley	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
6 Escambia	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8:										
Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Pamlico	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
9, 10, 11 Dothan	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
12 Foxworth	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
13 Fuquay	Fair	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
14 Fuquay	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
15:										
Kinston	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Johnston	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
16 Kureb	Very poor.	Poor	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.
17, 18, 19 Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
20:										
Leefield	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Stilson	Fair	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
21 Leon	Poor	Fair	Good	Poor	Fair	Fair	Poor	Fair	Fair	Poor.
22, 23 Lucy	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
25 Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
26 Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
27 Rutlege	Very poor.	Poor	Poor	Poor	Poor	Fair	Good	Poor	Poor	Fair.
28 Tifton	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
29 Tifton	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
30 Tifton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
31, 32, 33, 34 Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
35:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Orangeburg	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Cowarts	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
36. Pits										
37 Angie	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
38:										
Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Norfolk	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Angie	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
39 Pantego	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
40 Escambia	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
41 Maurepas	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Very poor.	Very poor.	Very poor.	Fair.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
42 Blanton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
43:										
Kinston	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
44:										
Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Urban land.										
45 Direqo	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Fair.
46 Norfolk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
47 Bonneau	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
48:										
Yemassee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Garcon	Poor	Fair	Good	Poor	Fair	Poor	Poor	Fair	Fair	Poor.
Bigbee	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
49 Eglin	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
50 Mandarin	Very poor.	Poor	Poor	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
51 Bigbee	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
52 Yemassee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
53 Arents	Poor	Poor	Fair	Very poor.	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
54:										
Newhan	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Corolla	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
55. Beaches										

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
56----------------- Kureb	Very poor.	Poor	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.
57----------------- Hurricane	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
58----------------- Duckston	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor.
59----------------- Malbis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
60----------------- Malbis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
61----------------- Malbis	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
62----------------- Resota	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
63----------------- Pickney	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
64----------------- Pamlico	Very poor.	Very poor.	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
65----------------- Garcon	Poor	Fair	Good	Poor	Fair	Poor	Poor	Fair	Fair	Poor.
66----------------- Kenansville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
68----------------- Florala	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
69----------------- Florala	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
70----------------- Shubuta	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
71----------------- Shubuta	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
72----------------- Osier	Very poor.	Poor	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
73----------------- Albany	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Poor.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
1:						
Albany	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Moderate: wetness, flooding.	Severe: droughty.
Pactolus	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Moderate: wetness, droughty.
2 Bonifay	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
3 Bonifay	Severe: cutbanks cave.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
4 Chipley	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
5 Chipley	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Severe: droughty.
6 Escambia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
8:						
Dorovan	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.
Pamlico	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, flooding, ponding.	Severe: ponding, flooding, excess humus.
9, 10 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
11 Dothan	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.
12 Foxworth	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
13 Fuquay	Slight	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
14 Fuquay	Slight	Slight	Moderate: wetness.	Moderate: slope.	Slight	Moderate: droughty.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
15:						
Kinston	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, low strength.	Severe: wetness, flooding.
Johnston	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding.
Bibb	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
16 Kureb	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
17 Lakeland	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty, too sandy.
18 Lakeland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, too sandy.
19 Lakeland	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
20:						
Leefield	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Stilson	Severe: cutbanks cave.	Slight	Moderate: wetness.	Slight	Slight	Moderate: droughty.
21 Leon	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
22 Lucy	Moderate: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
23 Lucy	Moderate: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
25 Orangeburg	Slight	Slight	Slight	Slight	Slight	Slight.
26 Orangeburg	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
27 Rutlege	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
28, 29 Tifton	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight	Slight.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
30 Tifton	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: slope.	Slight	Slight.
31 Troup	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
32 Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
33 Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
34 Troup	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
35:						
Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Orangeburg	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
36. Pits						
37 Angie	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
38:						
Bonneau	Severe: cutbanks cave.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Norfolk	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Angie	Moderate: too clayey, wetness, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
39 Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
40 Escambia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
41 Maurepas	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
42--------------- Blanton	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Severe: droughty.
43: Kinston----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, low strength.	Severe: wetness, flooding.
Bibb-------------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
44: Lakeland---------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty, too sandy.
Troup------------	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty, too sandy.
Urban land.						
45--------------- Dirego	Severe: cutbanks cave, excess humus, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, wetness, flooding.	Severe: excess salt, excess sulfur, wetness.
46--------------- Norfolk	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
47--------------- Bonneau	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
48: Yemassee---------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, droughty, flooding.
Garcon-----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, droughty, flooding.
Bigbee-----------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
49--------------- Eglin	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty, too sandy.
50--------------- Mandarin	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty, too sandy.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
51---------------- Bigbee	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
52---------------- Yemassee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.
53---------------- Arents	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.
54:						
Newhan-----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Corolla----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.	Severe: droughty.
55. Beaches						
56---------------- Kureb	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
57---------------- Hurricane	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: droughty.
58---------------- Duckston	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: droughty, flooding.
59, 60------------ Malbis	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Slight.
61---------------- Malbis	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Slight---------	Slight.
62---------------- Resota	Severe: cutbanks cave.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Severe: droughty.
63---------------- Pickney	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
64---------------- Pamlico	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: low strength, ponding.	Severe: ponding, excess humus.
65---------------- Garcon	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: wetness, droughty, flooding.
66---------------- Kenansville	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Slight---------	Moderate: droughty.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
68, 69 Florala	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
70 Shubuta	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
71 Shubuta	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
72 Osier	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
73 Albany	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: droughty.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1:					
Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
Pactolus	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage.
2, 3 Bonifay	Moderate: wetness, percs slowly.	Severe: seepage.	Moderate: too sandy.	Severe: seepage.	Fair: too sandy.
4 Chipley	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
5 Chipley	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
6 Escambia	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
8:					
Dorovan	Severe: flooding, ponding, poor filter.	Severe: flooding, excess humus, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding, excess humus.
Pamlico	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, excess humus, ponding.
9 Dothan	Severe: wetness, percs slowly.	Moderate: seepage.	Moderate: wetness.	Slight	Good.
10, 11 Dothan	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Slight	Good.
12* Foxworth	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
13, 14 Fuquay	Moderate: percs slowly.	Moderate: slope.	Slight	Slight	Fair: too sandy.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
15: Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Johnston	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding.
Bibb	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
16* Kureb	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
17* Lakeland	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
18* Lakeland	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
19* Lakeland	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
20: Leefield	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
Stilson	Severe: wetness.	Severe: seepage, wetness.	Moderate: wetness.	Severe: seepage.	Fair: wetness.
21 Leon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
22, 23 Lucy	Slight	Severe: seepage.	Slight	Severe: seepage.	Good.
25, 26 Orangeburg	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
27 Rutlege	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
28 Tifton	Moderate: percs slowly, wetness.	Moderate: seepage.	Slight	Slight	Fair: small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
29, 30 Tifton	Moderate: percs slowly, wetness.	Moderate: slope, seepage.	Slight	Slight	Fair: small stones.
31, 32 Troup	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
33 Troup	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
34 Troup	Severe: slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
35:					
Troup	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Severe: seepage.	Poor: seepage.
Orangeburg	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Cowarts	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
36. Pits					
37 Angie	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
38:					
Bonneau	Severe: wetness.	Severe: seepage, slope.	Severe: wetness.	Severe: seepage.	Fair: slope.
Norfolk	Moderate: wetness, slope.	Severe: slope.	Severe: wetness.	Slight	Fair: slope.
Angie	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
39 Pantego	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
40 Escambia	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
41 Maurepas	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
42 Blanton	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
43: Kinston	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Bibb	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
44*: Lakeland	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Troup	Moderate: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy, slope.
Urban land.					
45 Dirego	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
46 Norfolk	Moderate: wetness.	Moderate: seepage.	Severe: wetness.	Slight	Good.
47 Bonneau	Severe: wetness.	Severe: seepage.	Severe: wetness.	Severe: seepage.	Good.
48: Yemassee	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
Garcon	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: too sandy.
Bigbee	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
49 Eglin	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
50 Mandarin	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
51 Bigbee	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
52 Yemassee	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, seepage, wetness.	Poor: wetness.
53 Arents	Slight	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: seepage, too sandy.
54*:					
Newhan	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Corolla	Severe: wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: wetness, seepage.	Severe: seepage, wetness.	Poor: seepage, too sandy.
55. Beaches					
56* Kureb	Severe: slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
57 Hurricane	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, seepage, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
58 Duckston	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
59 Malbis	Severe: wetness, percs slowly.	Moderate: seepage.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
60, 61 Malbis	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
62* Resota	Moderate: wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
63 Pickney	Severe: ponding, poor filter.	Severe: ponding, seepage.	Severe: ponding, seepage, too sandy.	Severe: ponding, seepage.	Poor: too sandy, seepage, ponding.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
64 Pamlico	Severe: ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, excess humus, ponding.
65 Garcon	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: too sandy.
66 Kenansville	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
68 Florala	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Fair: wetness.
69 Florala	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Fair: wetness.
70 Shubuta	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
71 Shubuta	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
72 Osier	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
73 Albany	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.

* Because of poor filtration, there is a hazard of ground water contamination where there are many septic tanks.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1:				
Albany	Fair: wetness.	Probable	Improbable: excess fines.	Fair: too sandy.
Pactolus	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy.
2, 3 Bonifay	Good	Probable	Improbable: too sandy.	Fair: too sandy.
4 Chipley	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
5 Chipley	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
6 Escambia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
8:				
Dorovan	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
Pamlico	Poor: low strength, wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
9, 10, 11 Dothan	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, thin layer.
12 Foxworth	Good	Probable	Improbable: too sandy.	Poor: too sandy.
13, 14 Fuquay	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
15:				
Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Johnston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
16 Kureb	Good	Probable	Improbable: too sandy.	Poor: too sandy.
17, 18 Lakeland	Good	Probable	Improbable: too sandy.	Poor: too sandy.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
19 Lakeland	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
20: Leefield	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Stilson	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
21 Leon	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
22, 23 Lucy	Good	Improbable: excess fines, thin layer.	Improbable: excess fines.	Fair: too sandy.
25, 26 Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
27 Rutlege	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
28, 29, 30 Tifton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
31, 32, 33 Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
34 Troup	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
35: Troup	Good	Probable	Improbable: too sandy.	Fair: too sandy, slope.
Orangeburg	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, too clayey.
Cowarts	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
36. Pits				
37 Angie	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
38: Bonneau	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.

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TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
38: Norfolk	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Angie	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
39 Pantego	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
40 Escambia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
41 Maurepas	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
42 Blanton	Good	Probable	Improbable: too sandy.	Poor: too sandy.
43: Kinston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Bibb	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
44: Lakeland	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Troup	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Urban land.				
45 Dirego	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, excess salt, wetness.
46 Norfolk	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
47 Bonneau	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
48: Yemassee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Garcon	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy.
Bigbee	Good	Probable	Improbable: too sandy.	Poor: too sandy.
49 Eglin	Good	Probable	Improbable: too sandy.	Poor: too sandy.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
50 Mandarin	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
51 Bigbee	Good	Probable	Improbable: too sandy.	Poor: too sandy.
52 Yemassee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
53 Arents	Good	Probable	Improbable: too sandy.	Poor: too sandy.
54: Newhan	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
55. Beaches				
56 Kureb	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
57 Hurricane	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
58 Duckston	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
59, 60, 61 Malbis	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
62 Resota	Good	Probable	Improbable: too sandy.	Poor: too sandy.
63 Pickney	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness.
64 Pamlico	Poor: low strength, wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
65 Garcon	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too sandy.
66 Kenansville	Good	Probable	Improbable: too sandy.	Fair: too sandy.
68, 69 Florala	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
70, 71 Shubuta	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
72 Osier	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
73 Albany	Fair: wetness.	Probable	Improbable: excess fines.	Fair: too sandy.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1: Albany----------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
Pactolus---------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Droughty.
2, 3------------- Bonifay	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
4---------------- Chipley	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
5---------------- Chipley	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
6---------------- Escambia	Moderate: seepage, slope.	Severe: wetness.	Severe: slow refill.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, percs slowly.	Percs slowly.
8: Dorovan----------	Moderate: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding--------	Wetness.
Pamlico----------	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding, too sandy.	Wetness.
9---------------- Dothan	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, droughty.	Favorable------	Droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
10, 11----------- Dothan	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, slope, droughty.	Favorable------	Droughty.
12--------------- Foxworth	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
13--------------- Fuquay	Slight---------	Slight---------	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy------	Droughty.
14--------------- Fuquay	Slight---------	Slight---------	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy------	Droughty.
15: Kinston----------	Moderate: seepage.	Severe: wetness.	Slight---------	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
Johnston---------	Severe: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding, flooding.	Ponding, flooding.	Ponding--------	Wetness.
Bibb-------------	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
16--------------- Kureb	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy------	Droughty.
17--------------- Lakeland	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
18, 19----------- Lakeland	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
20: Leefield---------	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Favorable------	Wetness, droughty, fast intake.	Wetness--------	Droughty.
Stilson----------	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable------	Wetness, droughty.	Wetness--------	Droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
21: Leon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, droughty.
22: Lucy	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
23: Lucy	Severe: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
25, 26: Orangeburg	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
27: Rutlege	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
28: Tifton	Moderate: seepage.	Slight	Severe: no water.	Deep to water	Favorable	Favorable	Favorable.
29, 30: Tifton	Moderate: seepage, slope.	Slight	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
31: Troup	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
32: Troup	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Too sandy	Droughty.
33, 34: Troup	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
35: Troup	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
35: Orangeburg	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, slope.	Slope	Slope.
Cowarts	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Fast intake, percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
36. Pits							
37 Angie	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: slow refill.	Deep to water	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
38: Bonneau	Severe: slope, seepage.	Severe: thin layer.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Slope, soil blowing.	Slope, droughty.
Norfolk	Severe: slope.	Moderate: piping.	Moderate: deep to water.	Deep to water	Slope	Slope	Slope.
Angie	Severe: slope.	Moderate: hard to pack, wetness.	Severe: slow refill.	Deep to water	Percs slowly, slope, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
39 Pantego	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Favorable	Wetness	Wetness	Wetness.
40 Escambia	Moderate: seepage.	Severe: wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
41 Maurepas	Severe: seepage.	Severe: excess humus, ponding.	Slight	Ponding, flooding, subsides.	Ponding, flooding.	Ponding	Wetness.
42 Blanton	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy, soil blowing.	Droughty.
43: Kinston	Moderate: seepage.	Severe: wetness.	Slight	Flooding	Wetness, flooding.	Wetness	Wetness.
Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness, flooding.	Wetness	Wetness.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
44: Lakeland	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Troup	Severe: seepage.	Severe: piping, seepage.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
Urban land.							
45 Diregо	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: salty water, cutbanks cave.	Flooding, subsides, cutbanks cave.	Wetness, droughty, soil blowing.	Wetness, too sandy, soil blowing.	Wetness, excess salt, droughty.
46 Norfolk	Moderate: seepage, slope.	Moderate: piping.	Moderate: deep to water.	Deep to water	Slope	Favorable	Favorable.
47 Bonneau	Severe: seepage.	Severe: thin layer.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake, soil blowing.	Soil blowing	Droughty.
48: Yemassee	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding	Wetness, fast intake, droughty.	Wetness, soil blowing.	Wetness, droughty.
Garcon	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Flooding	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
Bigbee	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
49 Eglin	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
50 Mandarin	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Too sandy, soil blowing, wetness.	Droughty.
51 Bigbee	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
52---------------- Yemassee	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding-------	Wetness--------	Wetness, soil blowing.	Wetness.
53---------------- Arents	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
54: Newhan-----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
Corolla----------	Severe: seepage.	Severe: seepage, wetness, piping.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Droughty.
55. Beaches							
56---------------- Kureb	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake, slope.	Slope, too sandy.	Slope, droughty.
57---------------- Hurricane	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
58---------------- Duckston	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
59---------------- Malbis	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable------	Favorable------	Favorable.
60, 61------------ Malbis	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.
62---------------- Resota	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water, cutbanks cave.	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
63---------------- Pickney	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Cutbanks cave, ponding.	Droughty, fast intake, ponding.	Too sandy, soil blowing, ponding.	Wetness, droughty.
64---------------- Pamlico	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, subsides, cutbanks cave.	Ponding, soil blowing.	Ponding, too sandy, soil blowing.	Wetness.
65---------------- Garcon	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Flooding--------	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
66---------------- Kenansville	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too sandy------	Droughty.
68---------------- Florala	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly---	Wetness, droughty, fast intake.	Wetness, soil blowing.	Droughty, percs slowly.
69---------------- Florala	Moderate: seepage, slope.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, slope.	Wetness, droughty, fast intake.	Wetness, soil blowing.	Droughty, percs slowly.
70---------------- Shubuta	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope----------	Erodes easily	Erodes easily.
71---------------- Shubuta	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.
72---------------- Osier	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
73---------------- Albany	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
1:										
Albany----------	0-45	Loamy sand, sand	SM	A-2	100	100	75-90	13-23	---	NP
	45-80	Sandy clay loam, sandy loam.	SC, SM, SM-SC	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-17
Pactolus--------	0-28	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	51-100	6-30	---	NP
	28-80	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	100	100	51-100	5-30	---	NP
2---------------- Bonifay	0-44	Loamy sand, sand	SM	A-2-4	98-100	98-100	65-95	13-20	---	NP
	44-80	Sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2-4, A-4, A-2-6, A-6	95-100	90-100	63-95	22-50	<30	NP-12
3---------------- Bonifay	0-43	Loamy sand, sand	SM	A-2-4	98-100	98-100	65-95	13-20	---	NP
	43-80	Sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2-4, A-4, A-2-6, A-6	95-100	90-100	63-95	22-50	<30	NP-12
4---------------- Chipley	0-6	Sand-------------	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP
	6-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP
5---------------- Chipley	0-5	Sand-------------	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP
	5-80	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	80-100	6-12	---	NP
6---------------- Escambia	0-12	Sandy loam-------	SM, SM-SC, ML, CL-ML	A-4	95-100	95-100	70-90	40-65	<25	NP-7
	12-67	Fine sandy loam, sandy loam, loam, sandy clay loam.	SC, SM, CL, CL-ML	A-4, A-6	95-100	95-100	70-95	39-75	<30	NP-15
	67-80	Fine sandy loam, loam, sandy clay loam.	SC, CL, SM-SC, CL-ML	A-4, A-6	87-95	87-95	60-95	35-80	20-40	4-20
8:										
Dorovan---------	0-60	Muck-------------	PT	---	---	---	---	---	---	---
Pamlico---------	0-30	Muck-------------	PT	---	---	---	---	---	---	---
	30-80	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	---	NP
9---------------- Dothan	0-9	Loamy sand-------	SM	A-2	95-100	92-100	60-80	13-30	---	NP
	9-46	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	95-100	92-100	62-90	23-49	<40	NP-16
	46-80	Sandy clay loam, sandy clay, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23
10--------------- Dothan	0-8	Loamy sand-------	SM	A-2	95-100	92-100	60-80	13-30	---	NP
	8-36	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	95-100	92-100	62-90	23-49	<40	NP-16
	36-80	Sandy clay loam, sandy clay, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
11--------------- Dothan	0-7	Loamy sand-------	SM	A-2	95-100	92-100	60-80	13-30	---	NP
	7-40	Sandy clay loam, sandy loam.	SM-SC, SC, SM	A-2, A-4, A-6	95-100	92-100	62-90	23-49	<40	NP-16
	40-80	Sandy clay loam, sandy clay.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	95-100	92-100	70-95	30-53	25-45	4-23
12--------------- Foxworth	0-54	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	60-100	5-12	---	NP
	54-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	50-100	1-12	---	NP
13--------------- Fuquay	0-26	Loamy sand-------	SP-SM, SM	A-2, A-3	95-100	90-100	50-83	5-35	---	NP
	26-74	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	85-100	85-100	70-90	23-45	<25	NP-13
	74-80	Variable---------	---	---	---	---	---	---	---	---
14--------------- Fuquay	0-34	Loamy sand-------	SP-SM, SM	A-2, A-3	95-100	90-100	50-83	5-35	---	NP
	34-80	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	85-100	85-100	70-90	23-45	<25	NP-13
15: Kinston---------	0-6	Loam-------------	ML, CL, CL-ML	A-4, A-6	100	98-100	85-100	50-97	17-40	4-15
	6-42	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	100	95-100	75-100	60-95	20-45	8-22
	42-80	Variable---------	---	---	---	---	---	---	---	---
Johnston--------	0-37	Mucky loam-------	OL, ML, CL-ML	A-4, A-5, A-7-5	100	100	90-100	51-75	20-45	2-14
	37-65	Loamy sand, sand, sandy loam.	SM, SP-SM	A-2, A-3	100	100	50-100	5-30	---	NP
Bibb------------	0-12	Loam-------------	ML, CL-ML	A-4	95-100	90-100	80-90	50-80	<25	NP-7
	12-37	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	60-100	50-100	40-100	30-90	<30	NP-7
	37-65	Variable---------	---	---	---	---	---	---	---	---
16--------------- Kureb	0-80	Sand, coarse sand	SP, SP-SM	A-3	100	100	60-100	0-7	---	NP
17--------------- Lakeland	0-42	Sand, fine sand	SP-SM	A-3, A-2-4	90-100	90-100	60-100	5-12	---	NP
	42-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	90-100	90-100	50-100	1-12	---	NP
18--------------- Lakeland	0-37	Sand, fine sand	SP-SM	A-3, A-2-4	90-100	90-100	60-100	5-12	---	NP
	37-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	90-100	90-100	50-100	1-12	---	NP
19--------------- Lakeland	0-40	Sand, fine sand	SP-SM	A-3, A-2-4	90-100	90-100	60-100	5-12	---	NP
	40-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	90-100	90-100	50-100	1-12	---	NP
20: Leefield--------	0-26	Loamy sand, sand	SM, SW-SM, SP-SM	A-2	98-100	95-100	65-95	10-21	---	NP
	26-40	Sandy loam, fine sandy loam, sandy clay loam.	SC, SM, SM-SC	A-2, A-4, A-6	95-100	93-100	65-95	20-40	<40	NP-16
	40-80	Sandy loam, fine sandy loam, sandy clay loam.	SC, SM, SM-SC	A-2, A-4, A-6	95-100	95-100	65-90	20-40	<40	NP-20

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
20: Stilson	0-25	Loamy sand, sand	SM	A-2	94-100	94-100	74-92	15-24	---	NP
	25-32	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-6, A-4	89-100	86-100	77-94	25-41	<29	NP-13
	32-80	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-6, A-4	96-100	95-100	70-99	23-50	<40	NP-20
21 Leon	0-18	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
	18-31	Sand, fine sand, loamy sand.	SM, SP-SM, SP	A-3, A-2-4	100	100	80-100	3-20	---	NP
	31-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	100	100	80-100	2-12	---	NP
22 Lucy	0-33	Loamy sand	SM, SP-SM	A-2	98-100	95-100	50-87	10-30	---	NP
	33-39	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	97-100	95-100	55-95	15-50	<30	NP-15
	39-80	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	100	95-100	60-95	20-50	20-40	3-20
23 Lucy	0-28	Loamy sand	SM, SP-SM	A-2	98-100	95-100	50-87	10-30	---	NP
	28-33	Sandy loam, fine sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	97-100	95-100	55-95	15-50	<30	NP-15
	33-80	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	100	95-100	60-95	20-50	20-40	3-20
25 Orangeburg	0-10	Sandy loam	SM	A-2	98-100	95-100	75-95	20-35	---	NP
	10-17	Sandy loam	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	17-57	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	98-100	95-100	71-96	38-58	22-40	3-19
	57-80	Sandy clay loam, sandy clay, sandy loam.	SC, CL	A-6, A-4, A-7	98-100	95-100	70-97	40-65	24-46	8-21
26 Orangeburg	0-6	Sandy loam	SM	A-2	98-100	95-100	75-95	20-35	---	NP
	6-70	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	98-100	95-100	71-96	38-58	22-40	3-19
	70-80	Sandy clay loam, sandy clay, sandy loam.	SC, CL	A-6, A-4, A-7	98-100	95-100	70-97	40-65	24-46	8-21
27 Rutlege	0-17	Sand, fine sand	SM, SP-SM	A-2, A-3	95-100	95-100	50-80	5-35	---	NP
	17-80	Sand, fine sand, loamy sand, loamy fine sand.	SP-SM, SP, SM	A-2, A-3	95-100	95-100	50-80	2-25	---	NP
28 Tifton	0-16	Fine sandy loam, gravelly fine sandy loam.	SM, SM-SC	A-2	70-95	60-89	55-89	15-30	<20	NP-6
	16-34	Sandy loam, sandy clay loam, gravelly sandy clay loam.	SM, SM-SC	A-2	70-95	56-89	55-89	20-35	<25	NP-7
	34-60	Sandy clay loam, gravelly sandy clay loam.	SC, CL, SM	A-2, A-6, A-4	70-98	65-94	60-89	22-53	<40	NP-22
	60-80	Sandy clay loam, sandy clay.	SC, CL, SM	A-2, A-6, A-7, A-4	87-100	80-99	50-94	34-55	<45	NP-23

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
29---------------- Tifton	0-9	Fine sandy loam gravelly fine sandy loam.	SM, SM-SC	A-2	70-95	60-89	55-89	15-30	<20	NP-6
	9-13	Sandy loam, sandy clay loam, gravelly sandy clay loam.	SM, SM-SC	A-2	70-95	56-89	55-89	20-35	<25	NP-7
	13-27	Sandy clay loam, gravelly sandy clay loam.	SC, CL, SM	A-2, A-6, A-4	70-98	65-94	60-89	22-53	<40	NP-22
	27-80	Sandy clay loam, sandy clay.	SC, CL, SM	A-2, A-6, A-7, A-4	87-100	80-99	50-94	34-55	<45	NP-23
30---------------- Tifton	0-9	Fine sandy loam, gravelly fine sandy loam.	SM, SM-SC	A-2	70-95	60-89	55-89	15-30	<20	NP-6
	9-21	Sandy loam, sandy clay loam, gravelly sandy clay loam.	SM, SM-SC	A-2	70-95	56-89	55-89	20-35	<25	NP-7
	21-56	Sandy clay loam, gravelly sandy clay loam.	SC, CL, SM	A-2, A-6, A-4	70-98	65-94	60-89	22-53	<40	NP-22
	56-80	Sandy clay loam, sandy clay.	SC, CL, SM	A-2, A-6, A-7, A-4	87-100	80-99	50-94	34-55	<45	NP-22
31---------------- Troup	0-51	Sand--------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	51-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
32---------------- Troup	0-53	Sand--------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	53-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
33---------------- Troup	0-62	Sand--------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	62-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
34---------------- Troup	0-64	Sand--------------	SM, SP-SM	A-2	95-100	90-100	50-75	10-30	---	NP
	64-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
35:										
Troup------------	0-42	Loamy sand, sand	SM, SP-SM	A-2, A-4	95-100	90-100	50-90	10-40	---	NP
	42-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2, A-6	95-100	90-100	60-90	24-55	19-40	4-20
Orangeburg-------	0-13	Loamy sand--------	SM	A-2	98-100	95-100	60-87	14-28	---	NP
	13-17	Sandy loam--------	SM	A-2	98-100	95-100	70-96	25-35	<30	NP-4
	17-61	Sandy clay loam, sandy loam.	SC, CL, SM, SM-SC	A-6, A-4	98-100	95-100	71-96	38-58	22-40	3-19
	61-80	Sandy clay loam, sandy clay, sandy loam.	SC, CL	A-6, A-4, A-7	98-100	95-100	70-97	40-65	24-46	8-21

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
35: Cowarts	0-4	Loamy sand	SM	A-2	90-100	85-100	50-80	13-30	---	NP
	4-40	Fine sandy loam, sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2, A-4, A-6	95-100	90-100	60-90	23-45	20-40	NP-15
	40-80	Sandy loam, sandy clay loam, loamy sand.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6, A-7	85-100	80-100	60-95	30-58	25-53	5-20
36. Pits										
37 Angie	0-6	Sandy loam	SM, ML, CL-ML, SM-SC	A-4, A-2	95-100	90-100	60-85	30-55	<28	NP-10
	6-80	Sandy clay loam, clay loam, clay.	CH, CL	A-7-6	95-100	90-100	85-100	70-95	41-87	18-57
38: Bonneau	0-25	Loamy sand, loamy fine sand.	SM	A-2	100	100	50-95	15-35	---	NP
	25-68	Sandy loam, sandy clay loam, fine sandy loam.	SC, SM-SC	A-2, A-6, A-4	100	100	60-100	30-50	21-40	4-21
	68-80	Sandy loam, fine sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2	100	100	60-95	25-60	20-40	4-18
Norfolk	0-15	Loamy sand, loamy fine sand.	SM	A-2	95-100	92-100	50-95	13-30	<20	NP
	15-62	Fine sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	95-100	91-100	70-96	30-63	20-38	4-15
	62-80	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7-6	100	98-100	65-98	36-72	20-52	4-23
Angie	0-6	Sandy loam	SM, ML, CL-ML, SM-SC	A-4, A-2	95-100	90-100	60-85	30-55	<28	NP-10
	6-80	Sandy clay loam, clay loam, clay.	CH, CL	A-7	95-100	90-100	85-100	70-95	41-87	18-57
39 Pantego	0-17	Loam	SM, SM-SC, CL, ML	A-2, A-4	100	95-100	60-95	25-75	<35	NP-10
	17-35	Sandy clay loam, sandy loam, clay loam.	SC, CL, SM-SC, CL-ML	A-4, A-6, A-2	100	95-100	80-100	30-80	20-40	4-16
	35-80	Clay loam, sandy clay, sandy clay loam.	CL, SC	A-6, A-7	100	95-100	90-100	36-80	25-49	11-24
40 Escambia	0-17	Sandy loam	SM, SM-SC, ML, CL-ML	A-4	95-100	95-100	70-90	40-65	<25	NP-7
	17-67	Fine sandy loam, loam, sandy clay loam.	SC, SM, CL, CL-ML	A-4, A-6	95-100	95-100	70-95	39-75	<30	NP-15
	67-80	Fine sandy loam, loam, sandy clay loam.	SC, CL, SM-SC, CL-ML	A-4, A-6	87-95	87-95	60-95	35-80	20-40	4-20

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
41 Maurepas	0-65	Muck	PT	A-8	---	---	---	---	---	---
42 Blanton	0-65	Sand, fine sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	90-100	65-100	5-19	---	NP
	65-70	Sandy loam, loamy sand, loamy fine sand.	SM	A-2-4	100	95-100	65-96	13-30	<25	NP-3
	70-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	100	95-100	69-100	25-50	12-45	3-22
43: Kinston	0-10	Loam	ML, CL, CL-ML	A-4, A-6	100	98-100	85-100	50-97	17-40	4-15
	10-50	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	100	95-100	75-100	60-95	20-45	8-22
	50-80	Variable	---	---	---	---	---	---	---	---
Bibb	0-12	Loam	ML, CL-ML	A-4	95-100	90-100	80-90	50-80	<25	NP-7
	12-37	Sandy loam, fine sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	60-100	50-100	40-100	30-90	<30	NP-7
	37-65	Variable	---	---	---	---	---	---	---	---
44: Lakeland	0-42	Sand, fine sand	SP-SM	A-3, A-2-4	90-100	90-100	60-100	5-12	---	NP
	42-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	90-100	90-100	50-100	1-12	---	NP
Troup	0-51	Sand, loamy sand	SM, SP-SM	A-4	100	100	50-75	10-30	---	NP
	51-80	Sandy loam, sandy clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4	95-100	95-100	70-90	24-55	19-30	4-10
Urban land.										
45 Dirego	0-48	Muck	PT	A-8	---	---	---	---	---	---
	48-65	Fine sand, loamy fine sand, sand.	SM, SP-SM	A-3, A-2-4	100	100	80-100	6-13	---	NP
46 Norfolk	0-15	Loamy sand, loamy fine sand.	SM	A-2	95-100	92-100	50-95	13-30	<20	NP
	15-62	Fine sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	95-100	91-100	70-96	30-63	20-38	4-15
	62-80	Variable	---	---	---	---	---	---	---	---
47 Bonneau	0-25	Loamy sand	SM	A-2	100	100	50-95	15-35	---	NP
	25-27	Sandy loam, sandy clay loam, fine sandy loam.	SC, SM-SC	A-2, A-6, A-4	100	100	60-100	30-50	21-40	4-21
	27-80	Sandy loam, sandy clay loam, sandy clay.	CL, SC, SM-SC, CL-ML	A-4, A-6, A-2	100	100	60-95	25-60	20-40	4-18
48: Yemassee	0-17	Loamy sand	SM	A-2	100	100	75-100	15-35	<25	NP-4
	17-50	Sandy clay loam, clay loam, fine sandy loam.	CL, SC, CL-ML, SM-SC	A-2, A-4, A-6	100	100	75-100	30-70	16-38	4-18
	50-80	Variable	---	---	---	---	---	---	---	---

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
48: Garcon----------	0-18	Loamy fine sand, loamy sand.	SP-SM, SM	A-3, A-2-4	100	95-100	80-95	8-20	---	NP
	18-28	Loamy fine sand, loamy sand, fine sand.	SP-SM, SM	A-2-4, A-3	100	95-100	80-95	8-20	---	NP
	28-51	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC	A-2-4	100	85-100	80-95	18-35	<25	NP-7
	51-80	Fine sand, sand	SP-SM, SP	A-3	100	98-100	75-95	4-10	---	NP
Bigbee----------	0-23	Loamy sand, sand	SM	A-2-4	100	95-100	60-90	15-30	---	NP
	23-80	Sand, fine sand	SP-SM, SM	A-2-4, A-3	85-100	85-100	50-75	5-20	---	NP
49-------------- Eglin	0-2	Sand-------------	SP-SM	A-3, A-2-4	100	100	80-100	5-12	---	NP
	2-68	Sand, fine sand	SP-SM	A-3, A-2-4	100	100	80-100	5-12	---	NP
	68-80	Sand, fine sand	SP-SM, SM	A-3, A-2-4	100	100	80-100	5-15	---	NP
50-------------- Mandarin	0-21	Sand, fine sand	SP, SP-SM	A-3	100	100	90-100	2-10	---	NP
	21-38	Fine sand, sand, loamy fine sand.	SP-SM, SM	A-3, A-2-4	100	100	90-100	5-15	---	NP
	38-80	Fine sand, sand	SP, SP-SM	A-3	100	100	90-100	2-7	---	NP
51-------------- Bigbee	0-23	Loamy sand-------	SM	A-2-4	100	95-100	60-90	15-30	---	NP
	23-80	Sand, fine sand	SP-SM, SM	A-2-4, A-3	85-100	85-100	50-75	5-20	---	NP
52-------------- Yemassee	0-6	Fine sandy loam	SM	A-2, A-4	100	100	75-100	25-50	<30	NP-7
	6-47	Sandy clay loam, clay loam, fine sandy loam.	CL, SC, CL-ML, SM-SC	A-2, A-4, A-6	100	100	75-100	30-70	16-38	4-18
	47-80	Sandy clay loam, fine sandy loam, sandy clay.	SC, SM, CL-ML, SM-SC	A-2, A-4, A-6	100	100	75-100	25-55	<35	NP-15
53-------------- Arents	0-80	Sand-------------	SP, SP-SM	A-3	100	100	85-99	0-5	---	NP
54: Newhan----------	0-80	Sand, fine sand	SP, SP-SM	A-3	95-100	95-100	60-91	0-5	---	NP
Corolla----------	0-80	Sand, fine sand	SW, SP-SM, SP	A-2, A-3	80-100	75-100	60-95	1-12	---	NP
55. Beaches										
56-------------- Kureb	0-80	Sand, coarse sand	SP, SP-SM	A-3	100	100	60-100	0-7	---	NP
57-------------- Hurricane	0-63	Sand, fine sand	SP, SP-SM	A-3	100	100	77-100	4-8	---	NP
	63-80	Sand, fine sand	SP, SP-SM	A-3	100	100	78-100	4-8	---	NP
58-------------- Duckston	4-0	Muck-------------	PT	A-8	---	---	---	---	---	---
	0-80	Sand, fine sand	SP-SM, SP	A-2, A-3	100	95-100	60-75	3-12	---	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
59---------------- Malbis	0-13	Fine sandy loam	SM, ML	A-4	100	97-100	91-97	40-62	<30	NP-5
	13-25	Fine sandy loam, sandy clay loam.	CL-ML, CL, SM-SC	A-4, A-6	99-100	95-100	80-100	48-70	21-35	5-11
	25-45	Sandy clay loam, clay loam, fine sandy loam.	ML, CL	A-4, A-6, A-7	98-100	96-100	90-100	56-80	29-49	4-15
	45-80	Sandy clay loam, clay loam, fine sandy loam.	ML, CL	A-4, A-5, A-6, A-7	98-100	96-100	90-100	56-80	30-49	4-15
60---------------- Malbis	0-6	Fine sandy loam	SM, ML	A-4	100	97-100	91-97	40-62	<30	NP-5
	6-38	Loam, fine sandy loam, sandy clay loam, clay loam.	CL-ML, CL, SM-SC	A-4, A-6	99-100	95-100	80-100	48-70	21-35	5-11
	38-60	Sandy clay loam, fine sandy loam, clay loam, loam.	ML, CL	A-4, A-6, A-7	98-100	96-100	90-100	56-80	29-49	4-15
	60-80	Sandy clay loam, fine sandy loam, clay loam.	ML, CL	A-4, A-5, A-6, A-7	98-100	96-100	90-100	56-80	30-49	4-15
61---------------- Malbis	0-12	Fine sandy loam	SM, ML	A-4	100	97-100	91-97	40-62	<30	NP-5
	12-50	Sandy loam, sandy clay loam, clay loam.	CL-ML, CL, SM-SC	A-4, A-6	99-100	95-100	80-100	48-70	21-35	5-11
	50-65	Sandy clay loam, clay loam, loam.	ML, CL	A-4, A-6, A-7	98-100	96-100	90-100	56-80	29-49	4-15
	65-80	Sandy clay loam, clay loam.	ML, CL	A-4, A-5, A-6, A-7	98-100	96-100	90-100	56-80	30-49	4-15
62---------------- Resota	0-80	Sand, fine sand	SP, SP-SM, SM	A-3, A-2-4	100	100	85-99	1-15	---	NP
63---------------- Pickney	0-37	Sand--------------	SM, SP-SM	A-2	100	100	50-80	5-25	---	NP
	37-80	Loamy fine sand, loamy sand, sand.	SP, SP-SM, SM	A-2, A-3	100	100	50-90	3-25	---	NP
64---------------- Pamlico	0-25	Muck--------------	PT	---	---	---	---	---	---	---
	25-65	Sand, fine sand, loamy sand.	SM, SP-SM	A-2, A-3	100	100	70-95	5-20	---	NP
65---------------- Garcon	0-6	Loamy fine sand, loamy sand.	SP-SM, SM	A-3, A-2-4	100	95-100	80-95	8-20	---	NP
	6-25	Loamy fine sand, loamy sand, fine sand.	SP-SM, SM	A-2-4, A-3	100	95-100	80-95	8-20	---	NP
	25-46	Sandy loam, fine sandy loam, sandy clay loam.	SM, SM-SC	A-2-4	100	85-100	80-95	18-35	<25	NP-7
	46-80	Fine sand, sand	SP-SM, SP	A-3	100	98-100	75-95	4-10	---	NP
66---------------- Kenansville	0-31	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-1-b, A-2, A-3	100	95-100	40-99	5-30	---	NP
	31-57	Sandy loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4	100	95-100	50-99	20-40	<30	NP-10
	57-80	Loamy fine sand, fine sand, sand	SP-SM, SM	A-1-b, A-2, A-3	100	95-100	40-99	5-30	---	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
68--------------- Florala	0-10	Loamy sand, loamy fine sand	SM	A-2-4	98-100	95-100	60-85	18-35	---	NP
	10-30	Fine sandy loam, sandy loam.	SM	A-2, A-4	98-100	95-100	60-90	30-50	<30	NP-7
	30-80	Fine sandy loam, sandy loam, sandy clay loam.	SC, SM-SC	A-4, A-6	95-100	95-100	55-85	35-50	20-35	4-15
69--------------- Florala	0-17	Loamy sand, loamy fine sand	SM	A-2-4	98-100	95-100	60-85	18-35	---	NP
	17-39	Fine sandy loam, sandy loam.	SM	A-2, A-4	98-100	95-100	60-90	30-50	<30	NP-7
	39-80	Fine sandy loam, sandy loam, sandy clay loam.	SC, SM-SC	A-4, A-6	95-100	95-100	55-85	35-50	20-35	4-15
70--------------- Shubuta	0-11	Fine sandy loam, sandy loam	SM, ML, CL-ML, CL	A-2, A-4	95-100	95-100	70-95	30-75	<30	NP-10
	11-51	Clay, sandy clay, clay loam.	CH, CL, SC	A-7	95-100	95-100	95-100	45-90	41-70	16-40
	51-80	Clay, sandy clay, sandy clay loam.	CH, CL, SC	A-6, A-7	95-100	95-100	80-100	40-80	35-60	15-40
71--------------- Shubuta	0-11	Sandy loam-------	SM, ML, CL-ML, CL	A-2, A-4	95-100	95-100	70-95	30-75	<30	NP-10
	11-46	Clay, sandy clay, clay loam.	CH, CL, SC	A-7	95-100	95-100	95-100	45-90	41-70	16-40
	46-80	Clay, sandy clay, sandy clay loam.	CH, CL, SC	A-6, A-7	95-100	95-100	80-100	40-80	35-60	15-40
72--------------- Osier	0-4	Fine sand--------	SP-SM	A-2, A-3	100	98-100	60-85	5-12	---	NP
	4-80	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	100	95-100	65-96	5-20	---	NP
73--------------- Albany	0-45	Loamy sand-------	SM	A-2	100	100	75-90	13-23	---	NP
	45-80	Sandy clay loam, sandy loam.	SC, SM, SM-SC	A-2, A-4, A-6	97-100	95-100	70-100	20-50	<40	NP-17

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
1: Albany	0-45	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	<2	Low	0.10	5	2	1-2
	45-80	13-35	1.55-1.65	0.6-2.0	0.10-0.16	3.6-6.0	<2	Low	0.24			
Pactolus	0-28	2-12	1.60-1.75	6.0-20	0.05-0.10	4.5-6.0	<2	Low	0.10	5	---	.5-2
	28-80	2-12	1.60-1.75	6.0-20	0.03-0.07	4.5-5.5	<2	Low	0.10			
2 Bonifay	0-44	6-12	1.50-1.60	6.0-20	0.05-0.10	4.5-6.5	<2	Low	0.15	5	2	1-4
	44-80	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-6.5	<2	Low	0.24			
3 Bonifay	0-43	6-12	1.50-1.60	6.0-20	0.05-0.10	4.5-6.5	<2	Low	0.15	5	2	1-4
	43-80	15-35	1.60-1.70	0.6-2.0	0.10-0.15	4.5-6.5	<2	Low	0.24			
4 Chipley	0-6	1-5	1.35-1.45	6.0-20	0.05-0.10	3.6-6.0	<2	Low	0.10	5	2	2-5
	6-80	1-7	1.45-1.60	6.0-20	0.03-0.08	4.5-6.5	<2	Low	0.10			
5 Chipley	0-5	1-5	1.35-1.45	6.0-20	0.05-0.10	3.6-6.0	<2	Low	0.10	5	2	2-5
	5-80	1-7	1.45-1.60	6.0-20	0.03-0.08	4.5-6.5	<2	Low	0.10			
6 Escambia	0-12	5-14	1.35-1.55	2.0-6.0	0.11-0.15	5.1-5.5	<2	Low	0.24	4	---	.5-2
	12-67	8-18	1.35-1.55	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low	0.24			
	67-80	8-10	1.45-1.65	0.06-0.6	0.10-0.18	4.5-5.5	<2	Low	0.28			
8: Dorovan	0-60	---	0.35-0.55	0.6-2.0	0.25-0.50	3.6-4.4	<2	---	---	---	---	---
Pamlico	0-30	---	0.20-0.65	0.6-6.0	0.24-0.40	3.6-5.5	<2	Low	---	---	---	20-60
	30-80	5-10	1.60-1.75	6.0-20	0.10-0.20	3.6-5.5	<2	Low	0.10			
9 Dothan	0-9	5-15	1.30-1.60	2.0-6.0	0.06-0.10	4.5-6.0	<2	Low	0.15	5	---	<.5
	9-46	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	<2	Low	0.28			
	46-80	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	<2	Low	0.28			
10 Dothan	0-8	5-15	1.30-1.60	2.0-6.0	0.06-0.10	4.5-6.0	<2	Low	0.15	5	---	<.5
	8-36	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	<2	Low	0.28			
	36-80	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	<2	Low	0.28			
11 Dothan	0-7	5-15	1.30-1.60	2.0-6.0	0.06-0.10	4.5-6.0	<2	Low	0.15	5	---	<.5
	7-40	18-35	1.40-1.60	0.6-2.0	0.12-0.16	4.5-6.0	<2	Low	0.28			
	40-80	18-40	1.45-1.70	0.2-0.6	0.08-0.12	4.5-6.0	<2	Low	0.28			
12 Foxworth	0-54	1-8	1.25-1.55	>20	0.02-0.10	4.5-6.0	<2	Low	0.10	5	2	<1
	54-80	1-6	1.40-1.60	>20	0.02-0.08	4.5-6.0	<2	Low	0.10			
13 Fuquay	0-26	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	<2	Low	0.15	5	---	.5-2
	26-74	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	<2	Low	0.20			
	74-80	---	---	---	---	---	---	---	---			
14 Fuquay	0-34	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.0	<2	Low	0.15	5	---	.5-2
	34-80	10-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-6.0	<2	Low	0.20			
15: Kinston	0-6	5-27	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	<2	Low	0.37	5	---	2-5
	6-42	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	<2	Low	0.32			
	42-80	---	---	---	---	---	---	---	---			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
15:												
Johnston--------	0-37	7-18	1.25-1.45	2.0-6.0	0.20-0.26	4.5-5.5	<2	Low--------	0.17	5	---	8-18
	37-65	2-12	1.55-1.65	6.0-20	0.02-0.07	4.5-5.5	<2	Low--------	0.17			
Bibb------------	0-12	2-18	1.20-1.55	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low--------	0.28	5	---	.5-2
	12-65	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	<2	Low--------	0.37			
16---------------	0-80	0-3	1.60-1.80	6.0-20	<0.05	4.5-7.3	<2	Low--------	0.10	5	---	<2
Kureb												
17---------------	0-42	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<2	Low--------	0.10	5	2	<1
Lakeland	42-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
18---------------	0-37	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<2	Low--------	0.10	5	2	<1
Lakeland	37-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
19---------------	0-40	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<2	Low--------	0.10	5	2	<1
Lakeland	40-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
20:												
Leefield--------	0-26	5-10	1.45-1.60	6.0-20	0.04-0.07	4.5-6.0	<2	Low--------	0.10	5	---	1-2
	26-40	15-25	1.50-1.65	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low--------	0.15			
	40-80	15-30	1.50-1.70	0.2-0.6	0.08-0.12	4.5-5.5	<2	Low--------	0.10			
Stilson---------	0-25	3-8	1.35-1.60	6.0-20	0.06-0.09	4.5-5.5	<2	Low--------	0.10	5	---	.5-1
	25-32	15-30	1.40-1.60	0.6-2.0	0.09-0.12	4.5-5.5	<2	Low--------	0.24			
	32-80	15-35	1.40-1.60	0.6-2.0	0.08-0.10	4.5-5.5	<2	Low--------	0.17			
21---------------	0-18	1-6	1.40-1.65	6.0-20	0.02-0.05	3.6-5.5	<2	Low--------	0.10	5	2	.5-4
Leon	18-31	2-8	1.50-1.70	0.6-6.0	0.05-0.10	3.6-5.5	<2	Low--------	0.15			
	31-80	1-6	1.40-1.65	0.6-6.0	0.02-0.05	3.6-5.5	<2	Low--------	0.10			
22---------------	0-33	1-12	1.30-1.70	6.0-20	0.06-0.10	5.1-6.0	<2	Low--------	0.15	5	---	.5-1
Lucy	33-39	10-30	1.40-1.60	2.0-6.0	0.10-0.12	4.5-5.5	<2	Low--------	0.24			
	39-80	15-35	1.40-1.60	0.6-2.0	0.12-0.14	4.5-5.5	<2	Low--------	0.28			
23---------------	0-28	1-12	1.30-1.70	6.0-20	0.06-0.10	5.1-6.0	<2	Low--------	0.15	5	---	.5-1
Lucy	28-33	10-30	1.40-1.60	2.0-6.0	0.10-0.12	4.5-5.5	<2	Low--------	0.24			
	33-80	15-35	1.40-1.60	0.6-2.0	0.12-0.14	4.5-5.5	<2	Low--------	0.28			
25---------------	0-10	7-15	1.30-1.50	2.0-6.0	0.07-0.10	4.5-6.0	<2	Low--------	0.20	5	---	.5-2
Orangeburg	10-17	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	<2	Low--------	0.20			
	17-57	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low--------	0.24			
	57-80	20-45	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low--------	0.24			
26---------------	0-6	7-15	1.30-1.50	2.0-6.0	0.07-0.10	4.5-6.0	<2	Low--------	0.20	5	---	.5-2
Orangeburg	6-70	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low--------	0.24			
	70-80	20-45	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low--------	0.24			
27---------------	0-17	<10	---	6.0-20	0.04-0.10	3.6-5.0	<2	Low--------	0.17	5	---	3-15
Rutlege	17-80	<10	---	6.0-20	0.04-0.08	3.6-5.0	<2	Low--------	0.17			
28---------------	0-16	10-20	1.30-1.50	6.0-20	0.06-0.10	4.5-5.5	<2	Low--------	0.17	4	---	1-2
Tifton	16-34	13-22	1.45-1.65	6.0-20	0.08-0.12	4.5-5.5	<2	Low--------	0.24			
	34-60	20-35	1.50-1.70	0.6-2.0	0.12-0.16	4.5-5.5	<2	Low--------	0.24			
	60-80	25-40	1.55-1.80	0.2-0.6	0.10-0.13	4.5-5.5	<2	Low--------	0.17			
29---------------	0-9	10-20	1.30-1.50	6.0-20	0.06-0.10	4.5-5.5	<2	Low--------	0.17	4	---	1-2
Tifton	9-13	13-22	1.45-1.65	6.0-20	0.08-0.12	4.5-5.5	<2	Low--------	0.24			
	13-27	20-35	1.50-1.70	0.6-2.0	0.12-0.16	4.5-5.5	<2	Low--------	0.24			
	27-80	25-40	1.55-1.80	0.2-0.6	0.10-0.13	4.5-5.5	<2	Low--------	0.17			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors		Wind erodi- bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
30 Tifton	0-9	10-20	1.30-1.50	6.0-20	0.06-0.10	4.5-5.5	<2	Low	0.17	4	---	1-2
	9-21	13-22	1.45-1.65	6.0-20	0.08-0.12	4.5-5.5	<2	Low	0.24			
	21-56	20-35	1.50-1.70	0.6-2.0	0.12-0.16	4.5-5.5	<2	Low	0.24			
	56-80	25-40	1.55-1.80	0.2-0.6	0.10-0.13	4.5-5.5	<2	Low	0.17			
31 Troup	0-51	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low	0.10	5	---	<1
	51-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low	0.20			
32 Troup	0-53	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low	0.10	5	---	<1
	53-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low	0.20			
33 Troup	0-62	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low	0.10	5	---	<1
	62-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low	0.20			
34 Troup	0-64	1-10	1.30-1.70	6.0-20	0.05-0.10	4.5-6.0	<2	Low	0.10	5	---	<1
	64-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low	0.20			
35: Troup	0-42	2-12	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	<2	Low	0.17	5	---	<1
	42-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low	0.20			
Orangeburg	0-13	4-10	1.35-1.55	2.0-6.0	0.06-0.09	4.5-6.0	<2	Low	0.10	5	---	.5-1
	13-17	7-18	1.50-1.65	2.0-6.0	0.09-0.12	4.5-6.0	<2	Low	0.20			
	17-61	18-35	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low	0.24			
	61-80	20-45	1.60-1.75	0.6-2.0	0.11-0.14	4.5-5.5	<2	Low	0.24			
Cowarts	0-4	3-10	1.30-1.70	2.0-6.0	0.06-0.10	4.5-5.5	<2	Low	0.15	3	---	<1
	4-40	10-30	1.30-1.50	0.6-2.0	0.10-0.14	4.5-5.5	<2	Low	0.28			
	40-80	18-35	1.45-1.75	0.06-0.6	0.08-0.12	4.5-5.5	<2	Low	0.24			
36. Pits												
37 Angie	0-6	4-14	1.35-1.65	0.6-6.0	0.10-0.15	4.5-6.5	<2	Low	0.32	5	---	.5-2
	6-80	35-50	1.20-1.60	0.06-0.2	0.12-0.18	3.6-5.5	<2	High	0.32			
38: Bonneau	0-25	5-15	1.30-1.70	6.0-20	0.05-0.11	4.5-6.0	<2	Low	0.15	5	2	.5-2
	25-68	18-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low	0.20			
	68-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low	0.20			
Norfolk	0-15	2-8	1.55-1.75	6.0-20	0.06-0.11	4.5-6.0	<2	Low	0.17	5	---	.5-2
	15-62	18-35	1.30-1.45	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low	0.24			
	62-80	20-43	1.10-1.40	0.06-2.0	0.10-0.15	4.5-5.5	<2	Low	0.24			
Angie	0-6	4-14	1.35-1.65	0.6-6.0	0.10-0.15	4.5-6.5	<2	Low	0.32	5	---	.5-2
	6-80	35-50	1.20-1.60	0.06-0.2	0.12-0.18	3.6-5.5	<2	High	0.32			
39 Pantego	0-17	5-15	1.40-1.60	2.0-6.0	0.10-0.20	3.6-5.5	<2	Low	0.15	5	---	4-10
	17-35	18-35	1.30-1.40	0.6-2.0	0.12-0.20	3.6-5.5	<2	Low	0.28			
	35-80	18-40	1.25-1.40	0.6-2.0	0.15-0.20	3.6-5.5	<2	Low	0.28			
40 Escambia	0-17	5-14	1.35-1.55	2.0-6.0	0.11-0.15	5.1-5.5	<2	Low	0.24	4	---	.5-2
	17-67	8-18	1.35-1.55	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low	0.24			
	67-80	8-10	1.45-1.65	0.06-0.6	0.10-0.18	4.5-5.5	<2	Low	0.28			
41 Maurepas	0-65	---	0.05-0.25	>2.0	0.20-0.50	5.6-8.4	<4	Low	---	---	---	---

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
42---------------	0-65	1-7	1.30-1.60	6.0-20	0.03-0.07	4.5-6.0	<2	Low--------	0.10	5	2	.5-1
Blanton	65-70	10-18	1.53-1.65	2.0-6.0	0.10-0.15	4.5-5.5	<2	Low--------	0.15			
	70-80	12-30	1.60-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
43:												
Kinston----------	0-10	5-27	1.30-1.50	0.6-2.0	0.14-0.20	4.5-6.0	<2	Low--------	0.37	5	---	2-5
	10-50	18-35	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	<2	Low--------	0.32			
	50-80	---	---	---	---	---	---	------------	----			
Bibb-------------	0-12	2-18	1.20-1.55	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low--------	0.28	5	---	.5-2
	12-37	2-18	1.30-1.60	0.6-2.0	0.12-0.20	4.5-5.5	<2	Low--------	0.37			
	37-65	---	---	---	---	---	---	------------	----			
44:												
Lakeland---------	0-42	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	<2	Low--------	0.10	5	2	<1
	42-80	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	<2	Low--------	0.10			
Troup------------	0-51	1-10	1.30-1.70	6.0-20	0.08-0.12	4.5-6.0	<2	Low--------	0.10	5	---	<1
	51-80	15-35	1.40-1.60	0.6-2.0	0.10-0.13	4.5-5.5	<2	Low--------	0.20			
Urban land.												
45---------------	0-48	---	0.10-0.35	6.0-20	0.01-0.03	6.1-7.3	>16	Low--------	----	---	2	25-60
Dirego	48-65	2-12	1.50-1.60	6.0-20	0.01-0.03	5.6-6.5	2-16	Low--------	----			
46---------------	0-15	2-8	1.55-1.75	6.0-20	0.06-0.11	4.5-6.0	<2	Low--------	0.17	5	---	.5-2
Norfolk	15-62	18-35	1.30-1.45	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low--------	0.24			
	62-80	---	---	---	---	---	---	------------	----			
47---------------	0-25	5-15	1.30-1.70	6.0-20	0.05-0.11	4.5-6.0	<2	Low--------	0.15	5	2	.5-2
Bonneau	25-27	18-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.20			
	27-80	15-40	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low--------	0.20			
48:												
Yemassee---------	0-17	5-15	1.40-1.60	6.0-20	0.06-0.11	3.6-6.0	<2	Low--------	0.15	5	2	.5-4
	17-50	18-35	1.30-1.50	0.6-2.0	0.11-0.18	3.6-5.5	<2	Low--------	0.20			
	50-80	---	---	---	---	---	---	------------	----			
Garcon-----------	0-18	3-8	1.25-1.50	6.0-20	0.10-0.15	4.5-5.5	<2	Low--------	0.10	5	2	1-3
	18-28	3-8	1.40-1.65	6.0-20	0.05-0.10	4.5-5.5	<2	Low--------	0.10			
	28-51	12-30	1.55-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	51-80	3-6	1.50-1.70	6.0-20	0.05-0.08	4.5-5.5	<2	Low--------	0.10			
Bigbee-----------	0-23	4-10	1.40-1.50	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.17	5	---	.5-2
	23-80	1-10	1.40-1.50	6.0-20	0.05-0.08	4.5-6.0	<2	Low--------	0.17			
49---------------	0-2	1-8	1.20-1.55	6.0-20	0.05-0.10	4.5-5.5	<2	Low--------	0.10	5	2	.5-1
Eglin	2-68	1-6	1.50-1.65	6.0-20	0.05-0.10	4.5-5.5	<2	Low--------	0.10			
	68-80	1-8	1.50-1.70	0.6-6.0	0.07-0.13	4.5-5.5	<2	Low--------	0.10			
50---------------	0-21	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-6.0	<2	Low--------	0.10	5	2	<3
Mandarin	21-38	2-9	1.45-1.60	0.6-2.0	0.10-0.15	3.6-6.0	<2	Low--------	0.15			
	38-80	0-3	1.35-1.45	6.0-20	0.03-0.07	3.6-7.3	<2	Low--------	0.10			
51---------------	0-23	4-10	1.40-1.50	6.0-20	0.05-0.10	4.5-6.0	<2	Low--------	0.17	5	---	.5-2
Bigbee	23-80	1-10	1.40-1.50	6.0-20	0.05-0.08	4.5-6.0	<2	Low--------	0.17			
52---------------	0-6	10-20	1.30-1.60	2.0-6.0	0.10-0.15	3.6-6.0	<2	Low--------	0.20	5	3	.5-4
Yemassee	6-47	18-35	1.30-1.50	0.6-2.0	0.11-0.18	3.6-5.5	<2	Low--------	0.20			
	47-80	12-40	1.30-1.50	0.6-2.0	0.11-0.17	3.6-5.5	<2	Low--------	0.20			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
53---------------- Arents	0-80	1-5	1.30-1.70	>20	0.02-0.05	3.6-6.5	<2	Low--------	0.10	5	1	<1
54:												
Newhan-----------	0-80	---	1.60-1.75	>20	<0.05	3.6-7.8	<2	Low--------	0.10	5	---	<.5
Corolla----------	0-80	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	<2	Low--------	0.10	5	---	<.5
55. Beaches												
56---------------- Kureb	0-80	0-3	1.60-1.80	6.0-20	<0.05	4.5-7.3	<2	Low--------	0.10	5	---	<2
57----------------	0-63	1-4	1.40-1.60	>6.0	0.03-0.07	3.6-6.0	<2	Low--------	0.10	5	2	<2
Hurricane	63-80	1-4	1.40-1.60	>6.0	0.03-0.07	3.6-6.0	<2	Low--------	0.10			
58----------------	4-0	---	0.20-0.65	6.0-20	0.20-0.40	5.6-8.4	<4	Low--------	----	---	---	20-60
Duckston	0-80	0-4	1.60-1.70	>20	0.02-0.05	5.6-8.4	<2	Low--------	0.10	5	---	.5-1
59----------------	0-13	10-25	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	<2	Low--------	0.24	5	---	.5-1
Malbis	13-25	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	<2	Low--------	0.28			
	25-45	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low--------	0.28			
	45-80	20-35	1.45-1.70	0.2-0.6	0.06-0.12	4.5-5.5	<2	Low--------	0.28			
60----------------	0-6	10-25	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	<2	Low--------	0.24	5	---	.5-1
Malbis	6-38	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	<2	Low--------	0.28			
	38-60	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low--------	0.28			
	60-80	20-35	1.45-1.70	0.2-0.6	0.06-0.12	4.5-5.5	<2	Low--------	0.28			
61----------------	0-12	10-25	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	<2	Low--------	0.24	5	---	.5-1
Malbis	12-50	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	<2	Low--------	0.28			
	50-65	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low--------	0.28			
	65-80	20-35	1.45-1.70	0.2-0.6	0.06-0.12	4.5-5.5	<2	Low--------	0.28			
62---------------- Resota	0-80	<3	1.30-1.60	>20	0.02-0.05	3.6-6.5	<2	Low--------	0.10	5	1	<1
63----------------	0-37	1-10	1.20-1.40	6.0-20	0.04-0.10	3.6-6.0	<2	Low--------	0.10	5	1	3-15
Pickney	37-80	1-10	1.40-1.60	6.0-20	0.03-0.11	3.6-6.0	<2	Low--------	0.10			
64----------------	0-25	---	0.20-0.65	0.6-6.0	0.24-0.40	3.6-5.5	<2	Low--------	----	---	2	20-80
Pamlico	25-65	5-10	1.60-1.75	6.0-20	0.02-0.10	3.6-5.5	<2	Low--------	0.10			
65----------------	0-6	3-8	1.25-1.50	6.0-20	0.10-0.15	4.5-5.5	<2	Low--------	0.10	5	2	1-3
Garcon	6-25	3-8	1.40-1.65	6.0-20	0.05-0.10	4.5-5.5	<2	Low--------	0.10			
	25-49	12-30	1.55-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	49-80	3-6	1.50-1.70	6.0-20	0.05-0.08	4.5-5.5	<2	Low--------	0.10			
66----------------	0-31	1-10	1.50-1.70	6.0-20	<0.05	4.5-6.0	<2	Low--------	0.10	5	---	.5-2
Kenansville	31-57	5-18	1.30-1.50	2.0-6.0	0.10-0.14	4.5-6.0	<2	Low--------	0.15			
68----------------	0-10	5-14	1.40-1.60	2.0-6.0	0.05-0.08	4.5-5.5	<2	Low--------	0.17	5	2	.5-2
Florala	10-30	8-18	1.40-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	30-80	8-27	1.45-1.60	0.06-0.2	0.11-0.17	4.5-5.5	<2	Low--------	0.28			
69----------------	0-17	5-14	1.40-1.60	2.0-6.0	0.05-0.08	4.5-5.5	<2	Low--------	0.17	5	2	.5-2
Florala	17-39	8-18	1.40-1.70	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low--------	0.24			
	39-80	8-27	1.45-1.60	0.06-0.2	0.11-0.17	4.5-5.5	<2	Low--------	0.28			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
70--------------- Shubuta	0-11	2-15	1.25-1.50	0.6-2.0	0.12-0.16	4.5-6.0	<2	Low--------	0.37	5	---	1-3
	11-51	35-55	1.35-1.55	0.2-0.6	0.14-0.18	4.5-5.5	<2	Moderate	0.28			
	51-80	27-55	1.35-1.60	0.2-0.6	0.14-0.18	4.5-5.5	<2	Moderate	0.28			
71--------------- Shubuta	0-11	2-15	1.25-1.50	0.6-2.0	0.12-0.16	4.5-6.0	<2	Low--------	0.37	5	---	1-3
	11-46	35-55	1.35-1.55	0.2-0.6	0.14-0.18	4.5-5.5	<2	Moderate	0.28			
	46-80	27-55	1.35-1.60	0.2-0.6	0.14-0.18	4.5-5.5	<2	Moderate	0.28			
72--------------- Osier	0-4	1-10	1.35-1.60	6.0-20	0.03-0.10	3.6-6.0	<2	Low--------	0.10	5	2	2-5
	4-80	1-10	1.40-1.60	6.0-20	0.03-0.10	3.6-6.0	<2	Low--------	0.10			
73--------------- Albany	0-45	1-10	1.40-1.55	6.0-20	0.02-0.04	3.6-6.5	<2	Low--------	0.10	5	2	1-2
	45-80	1-20	1.50-1.70	2.0-6.0	0.08-0.10	4.5-6.0	<2	Low--------	0.20			

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
1: Albany	C	Rare	---	---	1.0-2.5	Apparent	Dec-Mar	High	High.
Pactolus	C	Rare	---	---	1.5-3.0	Apparent	Dec-Apr	Low	High.
2, 3 Bonifay	A	None	---	---	4.0-5.0	Perched	Jan-Feb	Low	High.
4 Chipley	C	None	---	---	2.0-3.0	Apparent	Dec-Apr	Low	High.
5 Chipley	C	None	---	---	2.0-3.0	Apparent	Dec-Apr	Low	High.
6 Escambia	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
8: Dorovan	D	Frequent	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	High	High.
Pamlico	D	Frequent	Brief to long.	Jan-Dec	+1-0	Apparent	Jan-Dec	High	High.
9, 10, 11 Dothan	B	None	---	---	3.0-5.0	Perched	Jan-Apr	Moderate	Moderate.
12 Foxworth	A	None	---	---	3.5-6.0	Apparent	Jun-Oct	Low	High.
13, 14 Fuquay	B	None	---	---	4.0-6.0	Perched	Jan-Mar	Low	High.
15: Kinston	B/D	Frequent	Brief	Nov-Jul	0-1.0	Apparent	Nov-Jun	High	High.
Johnston	D	Frequent	Brief to long.	Nov-Jul	+1-1.5	Apparent	Nov-Jun	High	High.
Bibb	D	Frequent	Brief	Nov-Jul	0.5-1.5	Apparent	Dec-Apr	High	Moderate.
16 Kureb	A	None	---	---	>6.0	---	---	Low	Low.
17, 18, 19 Lakeland	A	None	---	---	>6.0	---	---	Low	Moderate.
20: Leefield	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
Stilson	B	None	---	---	2.5-3.0	Apparent	Dec-Apr	Moderate	High.
21 Leon	B/D	None	---	---	0-1.0	Apparent	Jun-Feb	High	High.
22, 23 Lucy	A	None	---	---	>6.0	---	---	Low	High.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
25, 26------------ Orangeburg	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
27---------------- Rutlege	B/D	None--------	---	---	0-1.0	Apparent	Dec-May	High-----	High.
28, 29, 30-------- Tifton	B	None--------	---	---	3.5-6.0	Perched	Jan-Feb	Low------	Moderate.
31, 32, 33, 34---- Troup	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
35:									
Troup------------	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
Orangeburg-------	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
Cowarts----------	C	None--------	---	---	>6.0	---	---	Moderate	Moderate.
36. Pits									
37---------------- Angie	D	None--------	---	---	3.0-5.0	Apparent	Dec-Apr	High-----	Moderate.
38:									
Bonneau----------	A	None--------	---	---	3.5-5.0	Apparent	Dec-Mar	Low------	High.
Norfolk----------	B	None--------	---	---	4.0-6.0	Apparent	Jan-Mar	Moderate	High.
Angie------------	D	None--------	---	---	3.0-5.0	Apparent	Dec-Apr	High-----	Moderate.
39---------------- Pantego	B/D	None--------	---	---	+1-1.0	Apparent	Dec-May	High-----	High.
40---------------- Escambia	C	None--------	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
41---------------- Maurepas	D	Frequent----	Brief to very long.	Jan-Dec	+1-0.5	Apparent	Jan-Dec	High-----	Moderate.
42---------------- Blanton	A	None--------	---	---	5.0-6.0	Perched	Dec-Mar	High-----	High.
43:									
Kinston----------	B/D	Frequent----	Brief-----	Nov-Jun	0-1.0	Apparent	Nov-Jun	High-----	High.
Bibb-------------	D	Frequent----	Brief-----	Nov-Jun	0.5-1.5	Apparent	Dec-Apr	High-----	Moderate.
44:									
Lakeland---------	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
Troup------------	A	None--------	---	---	>6.0	---	---	Low------	Moderate.
Urban land.									
45---------------- Dirego	D	Frequent----	Very long	Jan-Dec	0-1.0	Apparent	Jan-Dec	High-----	High.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
46---------------- Norfolk	B	None--------	---	---	4.0-6.0	Apparent	Jan-Mar	Moderate	High.
47---------------- Bonneau	A	None--------	---	---	3.5-5.0	Apparent	Dec-Mar	Low------	High.
48: Yemassee----------	C	Occasional	Brief-----	Dec-Apr	1.0-1.5	Apparent	Dec-Mar	High-----	High.
Garcon-----------	C	Occasional	Brief-----	Dec-Apr	1.5-3.0	Apparent	Jan-Apr	High-----	High.
Bigbee-----------	A	Occasional	Brief-----	Dec-Apr	3.5-6.0	Apparent	Jan-Mar	Low------	Moderate.
49---------------- Eglin	A	None--------	---	---	>6.0	---	---	Low------	High.
50---------------- Mandarin	C	None--------	---	---	1.5-3.5	Apparent	Jun-Dec	Moderate	High.
51---------------- Bigbee	A	Occasional	Brief-----	Jan-Mar	3.5-6.0	Apparent	Jan-Mar	Low------	Moderate.
52---------------- Yemassee	C	Occasional	Brief-----	Dec-Apr	1.0-1.5	Apparent	Dec-Mar	High-----	High.
53---------------- Arents	A	None--------	---	---	>6.0	---	---	Low------	High.
54: Newhan-----------	A	None--------	---	---	>6.0	---	---	High-----	Low.
Corolla----------	D	Rare--------	---	---	1.5-3.0	Apparent	Nov-May	Low------	Low.
55. Beaches									
56---------------- Kureb	A	None--------	---	---	>6.0	---	---	Low------	Low.
57---------------- Hurricane	C	None--------	---	---	2.0-3.5	Apparent	Nov-Apr	Low------	Moderate.
58---------------- Duckston	D	Frequent----	Brief---	Jan-Dec	1.0-2.0	Apparent	Jan-Dec	Low------	Low.
59, 60, 61-------- Malbis	B	None--------	---	---	2.5-4.0	Perched	Dec-Mar	Moderate	Moderate.
62---------------- Resota	A	None--------	---	---	3.5-5.0	Apparent	Dec-Apr	Low------	High.
63---------------- Pickney	D	None--------	---	---	+1-1.0	Apparent	Nov-Apr	High-----	High.
64---------------- Pamlico	D	Rare--------	---	---	+2-0	Apparent	Dec-May	High-----	High.
65---------------- Garcon	C	Occasional	Brief-----	Dec-Apr	1.5-3.0	Apparent	Jan-Apr	High-----	High.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
66------------------ Kenansville	A	Rare---------	---	---	>6.0	---	---	Low-------	High.
68, 69------------- Florala	C	None---------	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
70, 71------------- Shubuta	C	None---------	---	---	>6.0	---	---	High------	High.
72------------------ Osier	B/D	None---------	---	---	0-1.0	Apparent	Nov-Mar	High------	High.
73------------------ Albany	C	None---------	---	---	1.0-2.5	Apparent	Dec-Mar	High------	High.

TABLE 17.--WATER TABLE DEPTHS AND RAINFALL

[Monthly readings based on the average of two readings taken on the first and middle of the month. Dashes indicate that data were not available]

Soil series	Year	January		February		March		April		May		June		July		August		September		October		November		December	
		Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall
		In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In
Albany	1978	---	---	---	---	---	---	---	---	---	---	25	4.0	15	6.0	20	5.8	37	0.7	37	1.3	31	3.9	22	3.1
	1979	10	7.3	8	7.1	13	6.1	12	2.0	25	4.3	27	3.0	11	7.1	21	2.0	29	4.3	33	1.4	31	1.2	21	3.6
	1980	8	3.1	20	0.3	0	9.6	19	4.3	2	3.9	12	3.0	27	3.2	36	1.8	---	---	44	1.7	12	5.2	26	1.5
	1981	27	0.3	25	4.5	22	2.6	39	0.9	14	4.2	42	2.8	46	1.9	43	3.6	46	2.9	44	2.4	52	0.6	0	8.6
	1982	23	---	22	4.7	24	3.4	20	3.2	31	1.2	39	2.0	5	6.0	25	3.8	30	0.8	35	2.0	27	2.2	3	5.3
	1983	7	3.9	10	3.2	15	4.6	---	4.1	---	2.6	---	5.3	---	1.3	---	---	---	4.0	---	1.2	---	5.0	16	---
	1984	18	3.5	12	4.5	22	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Angie	1978	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	---
	1979	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1980	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	72	---
	1981	71	1.2	35	5.2	29	3.2	66	0.9	48	4.5	73	2.5	74	3.8	60	3.5	65	3.7	78	2.1	78	---	2	3.5
	1982	36	5.0	18	4.7	34	2.5	33	2.5	73	1.0	64	4.3	12	5.3	18	5.0	55	1.1	52	3.7	55	2.3	39	3.1
	1983	8	5.8	28	6.0	30	4.6	---	4.2	---	---	---	5.0	---	1.2	---	1.2	---	4.0	---	4.5	---	4.2	24	---
	1984	22	3.0	23	3.0	24	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chipley	1978	---	---	---	---	---	---	---	---	---	---	28	4.6	11	8.7	15	6.3	56	0.4	56	1.2	53	4.4	45	2.1
	1979	17	5.2	9	6.2	21	1.4	18	1.5	35	3.3	49	0.7	21	10.1	9	5.0	20	5.0	39	3.2	46	1.7	39	1.4
	1980	31	4.1	22	3.5	14	2.9	14	8.1	24	3.1	40	2.7	18	5.1	41	1.9	---	---	45	4.0	43	2.0	37	2.6
	1981	43	0.2	28	1.6	33	4.5	---	0.0	34	4.7	36	4.8	36	4.3	22	5.8	40	1.8	51	1.7	57	0.7	52	3.6
	1982	40	2.5	29	3.3	29	2.5	21	4.5	48	0.5	26	5.8	2	6.5	24	5.3	28	4.8	34	2.3	30	3.4	18	5.5
	1983	10	4.7	19	4.9	15	4.3	16	4.2	30	1.9	6	4.7	46	0.7	50	2.4	31	4.0	29	2.3	34	3.6	23	4.5
	1984	20	3.5	18	2.9	13	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Foxworth	1978	---	---	---	---	---	---	---	---	---	---	43	---	36	---	35	---	53	---	55	---	63	---	63	---
	1979	47	---	34	---	36	---	38	---	51	---	57	---	48	---	35	---	38	---	55	---	63	---	55	---
	1980	51	---	53	---	39	---	37	---	43	---	57	---	46	---	55	---	---	---	57	---	57	---	57	---
	1981	59	1.0	50	1.5	46	3.7	51	---	48	4.3	62	1.9	66	1.9	51	4.7	62	1.6	65	2.9	71	1.0	67	4.5
	1982	60	2.5	54	3.3	53	2.5	49	3.6	65	0.7	52	5.0	27	5.5	42	3.3	47	2.6	53	2.3	50	2.6	41	4.8
	1983	33	5.2	37	4.5	35	5.0	34	4.6	50	---	37	5.0	65	0.2	68	0.2	54	4.0	57	---	51	4.0	46	---
	1984	42	4.0	42	2.4	33	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Garcon	1978	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1979	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	57	---	59	---	51	---
	1980	48	---	52	---	23	---	39	---	31	---	39	---	51	---	60	---	---	---	60	---	55	---	56	---
	1981	58	1.1	44	5.5	46	3.8	54	1.3	55	3.8	58	1.6	58	2.0	54	5.0	58	1.9	58	2.3	58	1.3	26	9.6
	1982	50	2.9	0	4.7	43	2.6	44	3.5	60	1.4	38	5.2	34	5.3	44	4.0	58	2.4	57	3.7	58	3.0	43	2.8
	1983	41	6.0	45	6.0	38	4.7	28	4.1	55	0.8	23	5.3	54	1.2	42	---	48	3.5	46	2.1	43	---	43	---
	1984	47	3.8	47	2.0	47	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hurricane	1978	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1979	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1980	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	40	3.5
	1981	47	1.2	30	6.0	41	3.7	26	---	26	5.4	45	2.0	45	1.6	30	4.9	43	0.8	48	2.6	52	1.1	55	1.6
	1982	33	2.5	26	3.3	27	2.7	31	2.4	46	0.5	26	3.5	2	6.0	27	3.5	35	2.6	40	3.6	39	3.2	25	4.9
	1983	19	5.0	23	4.4	17	5.1	16	4.6	37	---	19	5.0	44	0.3	53	---	35	3.8	43	1.8	32	4.0	26	---
	1984	22	4.3	26	2.2	14	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 17.--WATER TABLE DEPTHS AND RAINFALL--Continued

Soil series	Year	January		February		March		April		May		June		July		August		September		October		November		December	
		Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall	Water table	Rain-fall
		In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In	In
Leefield	1978	---	---	---	---	---	---	---	---	---	---	30	4.0	40	6.0	31	5.8	51	0.7	57	1.3	57	3.9	57	3.1
	1979	9	7.3	11	7.1	20	6.1	24	2.0	32	4.3	30	3.0	15	7.1	27	2.0	34	4.3	43	1.4	51	1.2	28	3.6
	1980	29	3.1	18	0.3	3	9.6	20	4.3	3	3.9	25	3.0	41	3.2	49	1.8	39	---	49	1.7	42	5.2	36	1.5
	1981	50	0.3	25	4.5	24	2.6	41	0.9	11	4.2	46	2.8	50	1.9	50	3.6	50	2.9	50	2.4	50	0.6	0	8.6
	1982	19	---	19	4.7	19	3.4	21	3.2	38	1.2	54	2.0	8	6.0	24	3.8	43	0.8	46	2.0	43	2.2	2	5.3
	1983	4	3.9	14	3.2	13	4.6	15	4.1	32	2.6	0	5.3	40	1.3	---	---	29	4.0	48	1.2	12	5.0	18	---
	1984	20	3.5	11	4.5	19	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Leon	1978	---	---	---	---	---	---	---	---	---	---	17	---	13	---	8	---	30	---	35	---	40	---	34	---
	1979	15	---	6	---	5	---	11	---	24	---	35	---	21	---	4	---	4	---	20	---	29	---	23	---
	1980	21	---	22	---	7	---	7	---	2	---	39	---	14	---	29	---	---	---	39	---	35	---	31	---
	1981	38	1.0	19	1.5	17	3.7	29	0.0	13	4.3	32	1.9	39	1.9	20	4.7	35	1.6	32	2.9	---	1.0	26	4.5
	1982	29	2.5	22	3.3	21	2.5	20	3.6	34	0.7	21	5.0	0	5.5	12	3.3	21	2.6	27	2.3	20	2.6	10	4.8
	1983	2	5.2	5	4.5	6	5.0	7	4.6	24	---	10	5.0	28	0.2	41	0.2	27	4.0	26	---	18	4.0	---	---
	1984	19	4.0	13	2.4	5	4.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mandarin	1978	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1979	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4.5	---	3.2	---	2.7	---	1.3
	1980	---	5.2	---	0.9	---	2.5	---	9.9	---	5.2	---	1.2	---	4.6	---	0.2	---	---	---	2.9	---	3.8	---	1.3
	1981	54	1.3	30	2.0	27	3.8	38	0.0	23	4.7	41	2.1	74	3.0	58	5.3	68	2.2	74	2.7	74	0.9	74	2.2
	1982	63	2.5	62	3.3	63	3.1	59	---	73	0.5	70	5.2	33	6.0	57	3.3	61	3.9	66	2.4	65	2.6	55	5.3
	1983	54	5.2	56	4.4	47	4.7	34	4.2	62	0.1	42	5.0	42	0.3	65	1.5	75	4.5	62	4.0	58	4.1	55	---
	1984	53	4.2	55	2.9	40	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Resota	1978	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1979	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	4.5	---	3.2	---	2.7	---	1.3
	1980	---	5.2	---	0.9	---	2.5	---	9.9	---	5.2	---	1.2	---	4.6	---	0.2	---	---	---	2.9	---	3.8	---	1.3
	1981	74	1.3	59	2.0	56	3.8	64	0.0	59	4.7	70	2.1	67	3.0	55	5.3	67	2.2	67	2.7	67	0.9	69	2.2
	1982	63	2.5	58	3.3	61	3.1	54	---	68	0.5	56	5.2	28	6.0	49	3.3	54	3.9	60	2.4	61	2.6	49	5.3
	1983	44	5.2	47	4.4	37	4.7	34	4.2	50	0.1	34	5.0	58	0.3	65	1.5	58	4.5	65	4.0	63	4.1	53	---
	1984	49	4.2	49	2.9	32	4.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Stilson	1978	---	---	---	---	---	---	---	---	---	---	23	4.0	40	6.0	30	5.8	50	0.7	57	1.3	57	3.9	53	3.1
	1979	15	7.3	7	7.1	20	6.1	16	2.0	31	4.3	30	3.0	15	7.1	27	2.0	33	4.3	39	1.4	51	1.2	28	3.6
	1980	18	3.1	18	0.3	3	9.6	20	4.3	3	3.9	25	3.0	41	3.2	49	1.8	---	---	49	1.7	39	5.2	---	1.5
	1981	41	0.3	24	4.5	22	2.6	38	0.9	10	4.2	42	2.8	52	1.9	52	3.6	52	2.9	52	2.4	52	0.6	0	8.6
	1982	22	---	22	4.7	23	3.4	22	3.2	38	1.2	57	2.0	5	6.0	24	3.8	45	0.8	43	2.0	38	2.2	2	5.3
	1983	4	3.9	10	3.2	13	4.6	19	4.1	31	2.6	0	5.3	40	1.3	---	---	29	4.0	43	1.2	12	5.0	18	---
	1984	19	3.5	13	4.5	20	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Yemassee	1978	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1979	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1980	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1981	12	1.1	17	5.5	17	3.8	30	1.3	27	3.8	41	1.6	44	2.0	29	5.0	39	1.9	33	2.3	29	1.3	0	9.6
	1982	19	2.9	16	4.7	18	2.6	17	3.5	29	1.4	10	5.2	2	5.2	7	4.0	36	2.4	32	3.7	20	3.0	0	2.8
	1983	1	6.0	0	6.0	8	4.7	10	4.1	33	0.8	1	5.3	39	1.2	---	---	30	3.5	24	2.1	8	---	10	---
	1984	12	3.8	9	2.0	15	3.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS

[Absence of an entry indicates information was not available]

Soil name and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conductivity (saturated)	Bulk density (field moisture)	Water content		
			Sand						Silt (0.05-0.002 mm)	Clay (<0.002 mm)			1/10 bar	1/3 bar	15 bar
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)							
	Cm		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	G/cc	----Pct (wt)----		
Angie sandy loam:															
S79FL-131-022-1	0-10	A	1.4	2.3	3.5	27.8	21.4	56.4	30.6	13.0	5.1	1.38	24.0	17.7	9.7
-2	10-15	BA	1.7	2.2	3.1	25.4	27.1	59.5	23.0	17.5	0.0	1.45	27.2	24.6	18.5
-3	15-38	Bt1	0.4	1.0	1.3	9.6	11.2	23.5	17.6	58.9	0.0	1.17	46.7	44.9	34.8
-4	38-68	Bt2	1.2	1.7	2.4	17.2	1.7	24.2	35.1	40.7	0.0	1.51	26.2	25.0	19.0
-5	68-89	Bt3	2.5	2.0	2.7	18.7	16.1	42.0	13.2	44.8	0.0	1.42	32.1	31.6	23.9
-6	89-140	Cg	0.4	0.6	1.0	3.4	3.8	9.2	21.0	69.8	0.0	1.18	48.9	47.7	40.6
-7	140-203	Cg	0.0	0.4	1.0	2.4	3.4	7.2	23.6	69.2	0.0	1.21	45.6	43.5	38.3
Blanton sand:															
S80FL-131-034-1	0-15	A	0.0	1.0	54.4	32.1	0.2	87.7	9.3	3.0	36.8	1.26	9.4	6.5	2.3
-2	15-41	E1	0.1	2.2	18.2	57.6	9.5	87.6	7.6	4.8	25.6	1.39	9.2	5.6	2.1
-3	41-89	E2	0.0	1.9	17.8	57.2	10.7	87.6	9.8	2.6	24.3	1.41	7.1	4.6	1.8
-4	89-140	E3	0.2	2.6	17.0	59.6	10.2	89.6	8.4	2.0	14.4	1.45	7.0	4.4	1.6
-5	140-165	E4	0.1	2.7	19.6	62.7	9.0	94.1	4.4	1.5	14.9	1.49	5.6	2.8	0.8
-6	165-178	Bt1	0.2	2.8	18.0	55.4	7.8	84.2	8.8	7.0	5.4	1.66	8.3	6.6	3.7
-7	178-190	Bt2	0.0	3.0	23.4	46.4	6.6	79.4	4.1	16.5	2.5	1.65	14.5	12.4	6.7
-8	190-203	Btg	0.0	3.6	24.0	45.6	5.8	79.0	5.3	15.7	1.0	1.73	15.0	12.7	7.5
Bonifay loamy sand:															
S79FL-131-004-1	0-18	A	0.5	10.0	37.0	30.8	8.0	86.3	9.4	4.3	16.7	1.45	11.1	8.0	3.2
-2	18-28	E1	0.6	11.6	36.9	27.8	7.3	84.2	10.8	5.0	6.8	1.64	10.3	7.2	2.9
-3	28-56	E2	0.7	11.6	34.7	29.7	7.2	83.9	10.3	5.8	5.9	1.71	10.2	7.1	3.0
-4	56-112	E3	0.6	11.2	35.7	29.4	7.3	84.2	10.6	5.2	5.1	1.68	9.6	6.7	3.0
-5	112-137	Bt	0.9	11.0	33.6	30.1	6.2	81.8	6.5	11.7	2.2	1.67	11.3	8.6	5.0
-6	137-183	Btv	1.3	13.5	33.8	27.5	5.9	82.0	2.4	15.6	2.7	1.71	12.7	10.1	6.8
-7	183-203	B't	1.6	15.6	37.0	23.4	2.6	80.2	6.0	13.8	1.1	1.72	15.1	12.6	8.3
Chipley sand:															
S79FL-131-021-1	0-15	A	0.4	11.9	52.9	27.3	0.6	93.1	4.7	2.2	63.7	1.40	6.9	4.8	1.2
-2	15-41	C1	0.4	12.3	53.5	25.2	1.0	92.4	6.3	1.3	49.9	1.47	6.9	4.8	1.4
-3	41-79	C2	0.6	13.6	56.4	21.4	1.5	93.5	5.1	1.4	27.6	1.55	5.4	3.7	1.1
-4	79-114	C3	1.6	15.1	49.4	27.1	1.6	94.8	4.1	1.1	30.2	1.56	4.9	3.3	0.7
-5	114-203	Cg	1.4	14.2	53.4	26.5	1.2	96.7	2.3	1.0	---	---	---	---	---
Dothan loamy sand:															
S80FL-131-029-1	0-20	Ap	0.8	10.4	36.5	25.7	5.3	78.7	14.4	6.9	8.9	1.51	13.4	10.2	5.1
-2	20-28	Bt1	1.0	10.6	31.6	21.2	5.2	69.6	16.4	14.0	3.3	1.82	12.4	10.5	7.1
-3	28-91	Bt2	1.6	13.0	27.2	17.0	4.6	63.4	15.6	21.0	1.5	1.69	14.7	12.6	9.2
-4	91-112	Btv1	1.4	12.6	31.0	15.8	3.8	64.6	11.8	23.6	2.5	1.68	16.3	14.7	10.1
-5	112-152	Btv2	1.4	14.2	34.2	14.0	2.8	66.6	10.2	23.2	1.0	1.69	17.3	15.9	10.4
-6	152-203	B't	2.0	19.4	38.6	10.0	1.6	71.6	9.8	18.6	0.5	1.75	15.1	13.3	10.7

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conductivity (saturated)	Bulk density (field moisture)	Water content		
			Sand						Silt (0.05-0.002 mm)	Clay (<0.002 mm)			1/10 bar	1/3 bar	15 bar
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)							
	Cm		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	G/cc	----Pct(wt)----		
Escambia sandy loam:															
S80FL-131-031-1	0-15	Ap	0.8	14.1	24.5	20.6	8.5	68.5	22.3	9.2	8.5	1.36	25.4	20.5	6.8
-2	15-23	A	2.4	14.4	22.4	20.4	8.0	67.6	26.4	6.0	0.7	1.49	19.0	15.1	5.6
-3	23-30	AB	2.0	13.6	23.2	20.8	9.0	68.6	23.9	7.5	1.4	1.55	16.3	12.5	5.1
-4	30-43	BA	2.8	12.8	22.2	20.8	9.6	68.2	23.6	8.2	3.6	1.63	13.8	10.8	4.7
-5	43-58	Bt	3.8	14.8	22.6	18.8	8.6	68.6	22.4	9.0	3.5	1.74	12.9	10.8	5.3
-6	58-74	Btv1	4.0	14.8	22.4	18.8	8.2	68.2	21.6	10.2	1.3	1.77	13.1	11.5	5.4
-7	74-99	Btv2	4.4	14.0	22.6	18.2	7.2	66.4	18.3	15.3	1.3	1.74	13.7	12.3	6.9
-8	99-170	B't	4.6	18.2	27.0	18.0	5.6	73.4	15.6	11.0	0.0	1.80	13.2	11.9	7.8
-9	170-185	2C1	0.8	6.2	12.2	11.8	10.6	41.6	37.5	20.9	0.0	1.74	17.1	15.5	11.1
-10	185-203	2C2	1.0	8.0	12.8	11.4	10.2	44.2	35.1	20.7	0.1	1.70	17.3	16.1	12.6
Florala loamy fine sand:															
S80FL-131-037-1	0-20	A	0.2	3.2	18.6	41.4	17.4	80.9	10.7	8.4	2.1	1.31	26.4	17.5	3.8
-2	20-30	E	0.4	4.2	20.2	39.4	16.0	80.2	12.0	7.8	3.8	1.57	16.3	11.6	3.2
-3	30-43	EB	0.4	4.2	20.4	40.4	15.2	80.6	11.5	7.9	4.3	1.58	14.9	11.2	3.5
-4	43-61	Bt1	0.4	4.2	20.8	39.4	13.4	78.2	11.8	10.0	5.4	1.63	13.5	10.6	4.2
-5	61-71	Bt2	0.4	4.2	21.0	38.4	12.6	76.6	10.0	13.4	2.0	1.68	15.7	13.2	5.9
-6	71-99	Btv	0.4	3.8	19.2	36.4	12.6	72.4	10.1	17.5	2.6	1.65	17.1	14.7	7.1
-7	99-162	B't1	0.2	3.0	17.2	33.8	13.2	67.4	11.6	21.0	0.1	1.70	18.3	16.3	7.9
-8	162-203	B't2	0.4	4.2	21.6	36.0	12.6	74.8	12.6	12.6	0.2	1.77	15.8	13.8	5.5
Foxworth sand:															
S79FL-131-023-1	0-8	A1	0.0	6.3	63.3	21.4	0.5	91.5	7.2	1.3	55.8	1.47	5.6	3.9	0.9
-2	8-18	A2	0.0	6.4	56.4	30.1	0.2	93.1	5.7	1.2	79.5	1.43	5.6	4.0	0.9
-3	18-46	C1	0.0	7.3	66.5	19.2	0.4	93.4	5.2	1.4	44.7	1.50	5.0	3.5	0.8
-4	46-84	C2	0.1	6.6	56.4	29.4	0.0	92.5	6.0	1.5	59.8	1.51	3.9	2.8	0.7
-5	84-112	C3	0.0	5.6	58.1	27.7	0.8	92.2	6.2	1.6	63.7	1.55	3.3	2.3	0.7
-6	112-137	C4	0.0	4.7	54.4	32.9	1.0	93.0	5.5	1.5	49.9	1.56	4.0	2.9	0.6
-7	137-175	C5	0.0	5.9	57.4	32.4	0.1	95.8	2.4	1.4	74.3	1.56	2.8	1.7	0.3
-8	175-203	C6	0.1	6.1	57.9	33.1	0.0	97.2	1.0	1.8	---	---	---	---	---
Fuquay loamy sand:															
S79FL-131-005-1	0-13	A	1.8	13.1	37.0	28.9	6.1	86.9	8.7	4.4	13.4	1.52	10.5	8.2	3.1
-2	13-30	E1	1.3	12.5	37.4	26.9	5.9	84.0	11.2	4.8	4.7	1.62	10.6	7.6	3.1
-3	30-66	E2	1.1	13.2	35.7	26.4	5.9	82.3	11.3	6.4	15.6	1.59	9.3	6.7	3.5
-4	66-89	Bt1	1.9	14.5	30.1	24.9	6.0	77.4	11.1	11.5	4.2	1.56	11.6	8.2	4.8
-5	89-134	Bt2	1.8	13.2	28.0	23.8	5.2	72.0	10.7	17.3	3.6	1.56	15.7	12.6	7.4
-6	134-155	Btv	1.8	13.2	29.8	23.4	3.6	71.8	9.3	18.9	0.8	1.65	15.8	13.5	10.4
-7	155-188	B't	2.8	16.4	31.6	17.8	2.0	70.6	9.6	19.8	3.4	1.64	15.6	13.6	8.9
-8	188-203	C	3.6	30.6	36.0	7.6	1.4	79.2	3.8	17.0	4.5	1.63	10.6	8.8	5.7

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conductivity (saturated)	Bulk density (field moisture)	Water content		
			Sand						Silt (0.05-0.002 mm)	Clay (<0.002 mm)			1/10 bar	1/3 bar	15 bar
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)							
	Cm		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	G/cc	----Pct (wt)----		
Hurricane sand:															
S80FL-131-032-1	0-13	A	0.4	11.8	66.8	14.8	0.3	94.1	4.4	1.5	87.4	1.30	8.8	5.9	1.6
-2	13-36	E1	0.4	13.0	66.9	13.7	0.3	94.3	4.0	1.7	76.3	1.33	5.8	4.3	1.5
-3	36-56	E2	0.5	10.6	66.2	15.7	0.3	93.3	4.3	2.4	78.9	1.40	5.1	3.9	1.5
-4	56-79	E3	0.5	11.7	64.5	15.3	0.4	92.4	4.8	2.8	38.8	1.56	5.5	4.2	1.7
-5	79-119	E4	0.4	8.3	62.2	19.9	0.6	91.4	4.5	4.1	19.5	1.58	7.7	5.6	2.2
-6	119-160	E5	1.3	13.9	61.2	22.9	0.2	99.5	0.1	0.4	---	---	---	---	---
-7	160-203	Bh	1.2	16.3	63.4	17.2	0.1	98.2	1.0	0.8	---	---	---	---	---
Kureb sand:															
S79FL-131-008-1	0-10	A	0.0	2.0	62.5	32.6	0.4	97.5	1.5	1.0	124.0	1.31	6.3	4.8	1.3
-2	10-25	E1	0.0	2.1	60.6	34.9	0.3	97.9	1.6	0.5	112.0	1.51	2.7	2.0	0.8
-3	25-43	E2	0.0	2.0	63.6	31.4	0.6	97.6	1.8	0.6	139.0	1.35	5.1	4.0	0.8
-4	43-71	B/E	0.0	1.4	58.7	34.1	0.7	94.9	2.9	2.2	98.6	1.45	4.2	3.0	1.4
-5	71-94	Bw1	0.0	1.6	57.5	35.4	0.4	94.9	3.1	2.0	76.2	1.37	4.6	3.6	1.6
-6	94-119	Bw2	0.0	1.8	56.4	36.9	0.6	95.7	2.5	1.8	134.0	1.53	3.7	2.6	1.3
-7	119-173	Bw3	0.0	1.7	59.7	34.4	0.5	96.3	2.4	1.3	---	---	---	---	---
-8	173-203	C	0.0	1.0	49.8	47.1	0.5	98.4	0.9	0.7	---	---	---	---	---
Lakeland sand:															
S79FL-131-002-1	0-10	A	0.1	7.4	55.7	27.5	2.4	93.1	5.0	1.9	47.0	1.37	8.2	5.7	1.5
-2	10-18	C1	0.1	8.9	54.7	26.7	2.0	92.4	5.6	2.0	19.4	1.60	7.2	4.8	1.3
-3	18-107	C2	0.1	8.9	57.7	24.0	2.1	92.8	5.6	1.6	25.3	1.65	5.2	3.8	1.4
-4	107-132	C3	0.1	9.4	58.0	23.1	1.9	92.5	5.3	2.2	33.2	1.49	4.6	3.3	1.4
-5	132-152	C4	0.1	9.2	54.5	28.3	2.2	94.3	4.2	1.5	34.5	1.58	4.5	2.9	1.2
-6	152-203	C5	0.1	9.3	54.0	30.2	2.4	96.0	2.8	1.2	66.7	1.55	3.1	2.1	0.9
Leefield loamy sand:															
S79FL-131-018-1	0-18	Ap	2.7	8.7	30.7	37.1	8.2	87.4	6.4	6.2	17.1	1.41	16.6	11.2	3.8
-2	18-38	E1	0.7	8.5	27.3	43.7	1.8	82.0	11.4	6.6	10.5	1.53	10.7	7.3	3.3
-3	38-66	E2	1.3	7.4	24.8	43.7	3.8	81.0	9.1	9.9	9.2	1.58	11.2	8.3	4.1
-4	66-86	Bt1	0.7	5.9	19.1	51.3	2.5	79.5	5.6	14.9	0.9	1.65	14.9	12.0	7.1
-5	86-102	Bt2	0.2	2.5	12.9	55.9	0.6	72.1	3.6	24.3	0.8	1.64	19.6	17.8	11.6
-6	102-124	Btv	0.0	1.4	16.3	54.0	0.7	72.4	1.3	26.3	0.1	1.60	21.5	18.7	12.9
-7	124-175	B't	0.0	1.2	11.5	58.2	1.1	72.0	1.6	26.4	0.4	1.68	17.9	14.7	9.6
-8	175-203	BC	0.2	4.3	19.4	53.0	0.4	77.3	2.5	20.2	0.1	1.63	17.2	13.8	8.6
Leon sand:															
S79FL-131-024-1	0-13	A1	0.1	8.5	63.1	21.0	0.9	93.6	5.5	0.9	62.4	1.35	9.0	6.5	1.8
-2	13-23	A2	0.2	9.1	64.3	19.0	0.7	93.3	6.0	0.7	49.3	1.40	9.3	6.4	1.5
-3	23-46	E	0.4	8.2	58.5	25.2	1.3	93.6	5.6	0.8	40.7	1.60	5.1	3.4	0.6
-4	46-56	Bh1	0.5	6.9	53.5	28.6	0.0	89.5	6.7	3.8	9.9	1.52	19.5	10.5	4.7
-5	56-68	Bh2	0.5	9.4	55.7	20.1	1.7	86.4	6.9	6.7	4.3	1.41	18.1	13.8	4.0
-6	68-79	BE	0.4	7.6	57.7	25.5	1.0	92.2	3.5	4.3	20.3	1.58	7.9	5.5	2.4
-7	79-170	E'	0.5	7.5	57.6	32.3	1.0	98.9	0.2	0.9	---	---	---	---	---
-8	170-203	B'h	1.3	11.0	59.7	24.0	1.0	97.0	0.4	2.5	---	---	---	---	---

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conductivity (saturated)	Bulk density (field moisture)	Water content		
			Sand												
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)			1/10 bar	1/3 bar	15 bar
	Cm		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	G/cc	----Pct (wt)----		
Malbis sandy loam:															
S79FL-131-007-1	0-15	Ap	0.6	5.7	17.4	27.5	12.8	64.0	27.6	8.4	1.0	1.56	17.7	15.0	7.7
-2	15-30	Bt1	0.8	5.8	16.8	24.4	11.8	59.6	25.8	14.6	0.8	1.68	17.2	14.2	8.1
-3	30-74	Bt2	0.8	5.2	15.6	22.4	11.4	55.4	26.3	18.3	4.7	1.59	17.8	15.4	12.0
-4	74-96	Bt3	0.8	5.2	14.8	23.2	11.8	55.8	25.3	18.9	2.1	1.59	18.8	16.2	11.7
-5	96-122	Btv1	0.8	5.4	15.7	23.7	11.2	56.8	21.0	22.2	1.4	1.61	19.3	16.7	14.1
-6	122-152	Btv2	0.7	5.7	15.7	24.6	9.7	56.4	24.1	19.5	0.7	1.53	19.1	15.2	10.4
-7	152-203	B't	0.9	6.6	18.9	25.5	10.8	62.7	19.2	18.1	0.2	1.73	17.8	15.8	11.0
Mandarin sand:															
S80FL-131-033-1	0-20	A	0.0	1.0	57.5	38.3	0.4	97.2	2.4	0.4	62.7	1.38	4.2	2.8	1.2
-2	20-53	E	0.0	1.1	61.1	35.4	0.3	97.9	1.6	0.5	63.4	1.39	2.8	2.0	0.5
-3	53-58	Bh1	0.0	1.0	51.7	36.3	0.4	89.4	7.6	3.0	23.7	1.36	14.8	12.8	5.5
-4	58-64	Bh2	0.0	0.8	45.4	41.1	0.5	87.8	8.7	3.5	83.5	1.29	13.4	11.1	5.4
-5	64-96	Bh3	0.0	1.1	61.0	29.9	0.3	92.3	4.5	3.2	63.7	1.36	10.5	8.4	3.0
-6	96-152	BC	0.0	1.5	62.9	30.7	0.2	95.3	2.9	1.8	34.2	1.51	6.4	4.6	1.8
-7	152-203	C	0.0	0.4	53.3	43.9	0.7	98.3	1.4	0.3	---	---	---	---	---
Newhan sand:															
S80FL-131-025-1	0-13	A	0.0	1.4	62.2	36.0	0.1	99.7	0.1	0.2	70.9	1.42	2.6	1.9	0.8
-2	13-56	C	0.0	3.2	72.7	23.7	0.0	99.6	0.0	0.4	92.4	1.46	2.5	1.8	0.9
-3	56-127	C	0.0	2.4	71.7	25.6	0.1	99.8	0.0	0.2	74.2	1.39	2.3	2.0	0.9
-4	127-203	C	0.0	0.9	71.1	27.6	0.0	99.6	0.3	0.1	---	---	---	---	---
Orangeburg sandy loam:															
S79FL-131-009-1	0-25	Ap	1.1	11.1	28.1	27.2	5.8	73.3	16.7	10.0	1.2	1.49	15.5	13.0	7.6
-2	25-43	BE	1.0	10.4	28.5	25.6	5.0	70.5	15.6	13.9	8.1	1.41	13.9	10.2	8.1
-3	43-64	Bt1	0.9	9.5	24.1	26.0	5.6	66.1	14.3	19.6	2.3	1.44	15.3	12.5	9.6
-4	64-102	Bt2	1.8	11.1	20.7	22.7	0.1	56.4	16.8	26.8	6.6	1.57	16.4	14.1	11.2
-5	102-145	Bt2	2.4	14.1	21.1	19.4	4.3	61.3	8.2	30.5	8.3	1.59	18.2	16.4	13.0
-6	145-175	Bt3	7.3	24.6	18.7	15.3	0.1	66.0	8.2	25.8	15.3	1.61	16.9	15.0	11.8
-7	175-203	Bt4	7.0	22.0	27.3	13.7	2.6	72.6	3.2	24.2	22.3	1.58	13.9	12.4	9.2
Pactolus loamy sand:															
S79FL-131-020-1	0-15	A1	0.5	8.8	33.3	32.8	3.7	79.1	18.1	2.8	55.8	1.26	27.1	21.0	4.6
-2	15-30	A2	1.2	13.0	37.5	28.5	2.6	82.8	14.3	2.9	11.5	1.46	17.0	12.4	2.7
-3	30-56	C1	1.3	14.0	37.1	28.9	0.4	81.7	13.3	5.0	5.3	1.71	9.1	6.2	2.8
-4	56-71	C2	2.0	31.5	41.1	11.1	0.8	86.5	8.5	5.0	7.9	1.74	9.2	6.0	2.6
-5	71-145	C3	1.5	14.0	45.9	30.8	1.2	93.4	4.4	2.2	26.9	1.68	4.4	2.5	0.7
-6	145-203	C4	1.3	16.3	47.9	25.2	0.7	91.4	3.3	5.3	2.5	1.74	12.6	9.9	5.8

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conductivity (saturated)	Bulk density (field moisture)	Water content		
			Sand												
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)			1/10 bar	1/3 bar	15 bar
	Cm		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	G/cc	----Pct (wt)----		
Pickney sand:															
S80FL-131-027-1	0-51	A	0.1	3.9	66.0	22.5	0.5	93.0	4.1	2.9	---	---	---	---	---
-2	51-94	A	0.0	3.5	63.5	22.6	0.5	90.1	7.1	2.8	---	---	---	---	---
-3	94-165	C1	0.0	4.2	68.0	18.5	0.4	91.1	5.2	3.7	---	---	---	---	---
-4	165-203	C2	0.0	4.7	68.1	20.7	0.3	93.8	4.1	2.1	---	---	---	---	---
Resota sand:															
S82FL-131-041-1	0-8	A	0.2	8.7	45.3	38.5	2.6	95.4	3.8	0.8	97.3	1.14	15.6	14.7	3.3
-2	8-33	E	0.2	8.6	44.6	41.0	2.9	97.3	2.1	0.6	43.4	1.38	5.3	4.1	0.7
-3	33-48	Bw1	0.2	7.2	41.5	41.5	3.0	93.4	4.2	2.4	53.9	1.47	6.0	4.1	0.9
-4	48-79	Bw2	0.2	7.6	41.0	42.3	3.3	94.4	3.6	2.0	59.1	1.43	5.4	3.2	1.0
-5	79-102	Bw3	0.2	7.4	39.4	44.6	3.3	94.9	2.7	2.4	86.7	1.35	4.3	2.5	0.7
-6	102-135	Bw4	0.4	8.1	39.3	44.6	3.6	96.0	2.7	1.3	78.2	1.44	3.7	2.0	0.4
-7	135-203	C	0.2	8.4	39.4	45.0	3.3	95.9	3.0	1.1	64.4	1.52	3.0	1.7	0.1
Rutlege fine sand:															
S80FL-131-028-1	0-43	A	0.3	7.8	28.9	49.3	5.8	92.1	5.3	2.6	---	---	---	---	---
-2	43-56	Cg1	0.5	9.6	34.0	45.4	5.0	94.5	3.4	2.1	---	---	---	---	---
-3	56-152	Cg2	0.5	10.7	34.4	44.2	5.2	95.0	3.5	1.5	---	---	---	---	---
-4	152-203	Cg3	0.4	12.5	36.6	44.2	4.8	98.5	0.9	0.6	---	---	---	---	---
Shubuta fine sandy loam:															
S82FL-131-042-1	0-15	A	0.3	1.4	4.4	46.4	25.8	78.3	10.5	11.2	6.1	1.26	24.3	19.5	6.0
-2	15-28	E	0.4	1.2	4.4	41.6	26.2	73.8	12.3	13.9	0.2	1.63	16.2	13.5	7.0
-3	28-43	Bt1	0.2	0.6	2.4	24.2	16.6	44.0	11.5	44.5	0.1	1.42	31.7	30.4	18.8
-4	43-86	Bt2	0.0	0.6	3.4	27.0	13.2	44.2	8.4	47.4	0.0	1.33	36.3	34.7	21.1
-5	86-130	Bt3	0.2	0.8	3.6	34.0	13.2	51.8	7.6	40.6	0.1	1.34	35.7	33.9	20.8
-6	130-175	Bt4	0.0	0.4	1.0	26.8	20.8	49.0	10.0	41.0	0.1	1.37	32.2	30.8	17.3
-7	175-203	Bt5	0.2	0.2	0.6	18.8	22.6	42.4	13.7	43.9	0.6	1.18	42.1	37.4	18.1
Stilson loamy sand:															
S79FL-131-019-1	0-18	Ap	0.8	11.4	35.7	32.3	6.5	86.7	7.2	6.1	16.7	1.47	12.7	8.9	2.7
-2	18-28	E1	1.1	11.8	34.7	32.4	4.3	84.3	10.4	5.3	7.6	1.58	10.0	7.3	2.7
-3	28-41	E2	0.8	9.8	29.6	38.2	2.0	80.4	9.8	9.8	14.1	1.59	9.7	6.9	3.2
-4	41-64	E3	1.5	9.4	29.3	35.6	4.5	80.3	9.1	10.6	7.9	1.62	9.9	7.9	4.1
-5	64-81	Bt	1.2	8.0	27.3	38.8	3.5	78.8	6.1	15.1	1.8	1.68	14.5	12.3	7.1
-6	81-109	Btv	0.5	4.0	22.8	43.1	1.5	71.9	2.9	25.2	0.0	1.63	19.8	18.4	13.3
-7	109-135	B't1	0.2	1.6	13.6	51.4	1.0	67.8	2.1	30.1	0.1	1.66	20.4	18.8	12.7
-8	135-203	B't2	0.1	0.8	8.2	62.6	0.5	72.2	1.3	26.5	0.1	1.71	23.8	22.2	11.7

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution								Hydraulic conduc-tivity (saturated)	Bulk density (field moisture)	Water content		
			Sand												
			Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)			1/10 bar	1/3 bar	15 bar
	Cm		Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Cm/hr	G/cc	----Pct (wt)----		
Tifton fine sandy loam:															
S79FL-131-010-1	0-10	Ac1	0.4	4.2	18.2	32.5	13.6	68.9	23.2	7.9	9.6	1.47	17.8	13.3	4.8
-2	10-23	Ac2	0.6	4.4	16.8	33.7	12.8	68.3	22.0	9.7	4.7	1.54	14.6	11.2	5.3
-3	23-33	BEc	0.5	4.0	17.2	32.1	13.9	67.7	18.1	14.2	1.2	1.65	16.7	13.2	6.3
-4	33-68	Btc	0.7	3.2	13.9	27.8	12.5	58.1	15.3	26.6	3.1	1.54	18.0	14.3	7.5
-5	68-130	Btcv1	0.4	3.2	14.4	29.0	12.8	59.8	18.7	21.5	4.6	1.63	18.9	16.6	10.3
-6	130-145	Btcv2	0.6	6.8	20.4	24.0	9.2	61.0	14.9	24.1	0.4	1.61	19.8	17.8	11.5
-7	145-203	Bt	0.6	9.2	22.0	18.4	7.4	57.6	14.2	28.2	0.8	1.68	20.7	17.3	13.2
Troup sand:															
S79FL-131-006-1	0-18	Ap	1.0	10.0	30.7	39.0	9.0	89.7	7.7	2.6	44.0	1.34	9.3	6.2	2.4
-2	18-41	E1	1.5	12.2	33.6	34.6	7.0	88.9	7.4	3.7	20.4	1.54	6.8	4.6	2.0
-3	41-76	E2	1.8	11.2	29.9	38.1	5.1	86.1	9.0	4.9	30.6	1.51	6.1	4.4	2.2
-4	76-99	E3	1.6	10.9	28.9	37.3	8.6	87.3	7.3	5.4	12.2	1.60	6.8	5.0	2.9
-5	99-117	E4	1.5	10.1	26.7	40.6	7.2	86.1	8.2	5.7	13.8	1.58	6.6	4.9	2.8
-6	117-130	E5	1.6	9.5	27.1	39.3	8.4	85.9	6.1	8.0	15.1	1.58	8.6	6.6	4.5
-7	130-140	Bt1	1.2	8.6	23.6	37.6	8.8	79.8	5.9	14.3	16.8	1.50	13.0	10.6	6.9
-8	140-203	Bt2	1.0	8.0	22.8	32.6	7.6	72.0	5.4	22.6	2.7	1.61	14.1	12.2	9.5
Yemassee fine sandy loam:															
S82FL-131-043-1	0-8	A1	0.1	0.4	3.9	41.3	27.6	73.3	18.0	8.7	0.3	1.47	19.8	15.1	4.9
-2	8-15	A2	0.0	0.4	4.2	39.0	27.6	71.2	18.3	10.5	0.1	1.64	16.4	13.1	4.1
-3	15-28	BA	0.0	0.4	5.0	38.6	23.6	67.6	14.1	18.3	0.0	1.77	16.1	14.5	6.8
-4	28-41	Bt1	0.2	0.6	6.2	37.2	19.0	63.2	13.0	23.8	0.0	1.69	20.2	18.5	9.2
-5	41-71	Bt2	0.0	0.4	4.8	36.6	20.4	62.2	11.5	26.3	0.1	1.43	27.9	25.9	13.6
-6	71-119	Bt3	0.0	0.4	5.8	41.6	21.4	69.2	10.1	20.7	0.2	1.61	20.2	17.4	8.0
-7	119-165	C	0.0	0.4	6.2	50.6	22.8	80.0	7.2	12.8	0.1	1.74	14.3	10.4	4.0
-8	165-203	C	0.0	0.4	4.8	49.6	24.4	79.2	6.2	14.6	0.0	1.71	13.1	9.2	3.7

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS

[Absence of an entry indicates information was not available]

Soil name and sample number	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Citrate-dithionite extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ 0.1m (1:2)	KCl in (1:1)	C	Fe	Al	Fe	Al
	Cm		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho/cm				Pct	Pct	Pct	Pct	Pct
Angie sandy loam:																				
S79FL-131-022-1	0-10	A	0.78	0.37	0.09	0.12	1.36	8.64	10.00	14	1.68	0.03	5.0	4.2	3.9	---	---	---	---	---
-2	10-15	BA	0.52	0.49	0.08	0.08	1.17	10.41	11.58	10	0.93	0.02	5.0	4.1	4.0	---	---	---	0.90	0.16
-3	15-38	Bt1	1.77	1.47	0.15	0.31	3.70	23.67	27.37	14	0.52	0.02	5.0	4.0	3.7	---	---	---	2.25	0.36
-4	38-68	Bt2	0.99	0.73	0.14	0.21	2.07	16.11	18.18	11	0.22	0.01	5.2	4.0	3.8	---	---	---	2.00	0.38
-5	68-89	Bt3	1.55	0.73	0.18	0.24	2.70	17.49	20.19	13	0.15	0.01	5.2	4.0	3.7	---	---	---	2.10	0.39
-6	89-140	Cg	4.52	2.54	0.35	0.78	8.19	34.09	42.28	19	0.30	0.01	5.2	3.8	3.5	---	---	---	2.10	0.32
-7	140-203	Cg	9.62	0.40	0.43	0.99	11.44	33.79	45.23	25	0.15	0.01	4.8	3.8	3.3	---	---	---	1.60	0.23
Blanton sand:																				
S80FL-131-034-1	0-15	A	0.19	0.06	0.03	0.02	0.30	3.81	4.11	7	0.80	0.01	4.4	4.4	4.5	---	---	---	---	---
-2	15-41	E1	0.07	0.03	0.03	0.01	0.14	2.26	2.40	6	0.31	0.01	4.4	4.7	4.5	---	---	---	---	---
-3	41-89	E2	0.07	0.03	0.02	0.01	0.13	1.05	1.18	11	0.12	0.01	4.3	4.6	4.6	---	---	---	---	---
-4	89-140	E3	0.06	0.03	0.02	0.01	0.12	0.86	0.98	12	0.06	0.01	4.5	4.7	4.6	---	---	---	---	---
-5	140-165	E4	0.09	0.03	0.03	0.01	0.16	0.61	0.77	21	0.02	0.01	4.6	4.8	4.8	---	---	---	---	---
-6	165-178	Bt1	0.13	0.12	0.06	0.01	0.32	1.66	1.98	16	0.05	0.01	4.4	4.5	4.5	---	---	---	---	---
-7	178-190	Bt2	0.20	0.39	0.04	0.02	0.65	4.64	5.29	12	0.07	0.01	4.5	4.4	4.3	---	---	---	0.67	0.14
-8	190-203	Btg	0.18	0.37	0.07	0.02	0.64	4.66	5.30	12	0.03	0.02	4.1	4.1	4.3	---	---	---	0.20	0.08
Bonifay loamy sand:																				
S79FL-131-004-1	0-18	A	0.90	0.16	0.02	0.03	1.11	4.71	5.82	19	0.94	0.03	5.6	4.8	4.3	---	---	---	---	---
-2	18-28	E1	0.28	0.09	0.02	0.00	0.39	1.40	1.79	22	0.26	0.02	5.6	4.9	4.6	---	---	---	---	---
-3	28-56	E2	0.13	0.07	0.01	0.01	0.22	2.40	2.62	8	0.26	0.02	5.2	4.9	4.6	---	---	---	---	---
-4	56-112	E3	0.15	0.07	0.01	0.00	0.23	1.60	1.83	13	0.26	0.03	5.1	4.6	4.5	---	---	---	---	---
-5	112-137	Bt	0.28	0.06	0.01	0.01	0.36	1.33	1.69	21	0.09	0.02	5.1	4.7	4.7	---	---	---	---	---
-6	137-183	Btv	0.28	0.14	0.02	0.01	0.45	2.39	2.84	16	0.09	0.02	5.2	4.9	4.9	---	---	---	1.18	0.18
-7	183-203	B't	0.12	0.09	0.01	0.01	0.23	2.58	2.81	8	0.08	0.03	4.9	4.6	4.8	---	---	---	1.32	0.19
Chipley sand:																				
S79FL-131-021-1	0-15	A	0.06	0.02	0.03	0.04	0.15	0.88	1.03	15	0.59	0.03	5.1	4.1	3.9	---	---	---	---	---
-2	15-41	C1	0.02	0.01	0.03	0.01	0.07	2.10	2.17	3	0.31	0.02	5.1	4.5	4.6	---	---	---	---	---
-3	41-79	C2	0.01	0.01	0.02	0.00	0.04	0.00	0.04	100	0.12	0.02	5.1	4.6	4.6	---	---	---	---	---
-4	79-114	C3	0.02	0.01	0.01	0.00	0.04	0.07	0.11	36	0.06	0.01	5.1	4.5	4.5	---	---	---	---	---
-5	114-203	Cg	0.01	0.01	0.01	0.00	0.03	0.00	0.03	100	0.03	0.01	5.2	4.7	4.6	---	---	---	---	---
Dirego muck:																				
S79FL-131-011-1	0-23	Oa1	27.31	39.09	60.03	2.79	129.22	61.07	190.29	68	28.78	47.50	4.0	4.0	3.8	---	---	---	---	---
-2	23-102	Oa2	33.00	36.01	48.83	1.89	119.73	68.84	185.57	65	30.55	48.50	3.4	3.5	3.3	---	---	---	---	---
-3	102-122	Oa3	10.94	21.60	38.28	1.61	72.43	26.69	99.12	73	16.49	36.25	4.0	4.0	3.8	---	---	---	---	---
-4	122-165	Cg	0.94	2.67	8.70	0.16	12.47	4.87	11.54	75	1.21	5.88	3.7	3.4	4.4	---	---	---	---	---

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Citrate-dithionite extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ 0.1m (1:2)	KCl in (1:1)	C	Fe	Al	Fe	Al
	Cm		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho/cm				Pct	Pct	Pct	Pct	Pct
Dorovan muck:																				
S79FL-131-015-1	0-13	Oa1	2.51	1.43	0.49	2.39	6.82	94.80	101.62	7	37.15	0.11	4.1	3.4	3.0	---	---	---	---	---
-2	13-76	Oa2	1.93	3.08	0.38	0.49	5.88	108.14	114.02	5	40.66	0.10	4.1	3.3	3.1	---	---	---	---	---
-3	76-140	Oa3	0.03	0.36	0.14	0.07	0.60	78.82	79.42	1	17.88	0.04	4.2	3.3	3.1	---	---	---	---	---
Dothan loamy sand:																				
S80FL-131-029-1	0-20	Ap	0.90	0.15	0.06	0.19	1.30	6.19	7.49	17	1.02	0.03	4.7	4.5	4.4	---	---	---	---	---
-2	20-28	Bt1	0.70	0.14	0.07	0.08	0.99	3.69	4.68	21	0.27	0.03	4.6	4.5	4.4	---	---	---	---	---
-3	28-91	Bt2	0.88	0.24	0.04	0.04	1.20	4.57	5.77	21	0.18	0.03	4.4	4.5	4.4	---	---	---	1.16	0.27
-4	91-112	Btv1	0.33	0.11	0.05	0.06	0.55	4.65	5.20	11	0.04	0.01	4.5	4.4	4.4	---	---	---	1.02	0.24
-5	112-152	Btv2	0.21	0.10	0.03	0.04	0.38	4.68	5.06	8	0.03	0.01	4.5	4.2	4.3	---	---	---	1.13	0.22
-6	152-203	B't	0.22	0.12	0.07	0.19	0.60	3.97	4.57	13	0.06	0.04	4.3	4.3	4.3	---	---	---	---	---
Escambia sandy loam:																				
S80FL-131-031-1	0-15	Ap	0.32	0.20	0.11	0.46	1.09	11.30	12.39	9	2.34	0.15	4.1	4.4	4.5	---	---	---	---	---
-2	15-23	A	0.18	0.07	0.09	0.12	0.46	7.79	8.25	6	1.24	0.12	4.3	4.7	4.8	---	---	---	---	---
-3	23-30	AB	0.17	0.08	0.08	0.05	0.38	5.37	5.75	7	0.60	0.06	4.2	4.8	4.8	---	---	---	---	---
-4	30-43	BA	0.20	0.09	0.04	0.03	0.36	3.67	4.03	9	0.17	0.04	4.3	4.7	4.8	---	---	---	0.04	0.14
-5	43-58	Bt	0.11	0.08	0.06	0.02	0.27	2.91	3.18	8	0.08	0.01	4.5	4.7	4.8	---	---	---	0.49	0.15
-6	58-74	Btv1	0.06	0.09	0.06	0.02	0.23	3.30	3.53	7	0.08	0.01	4.6	4.7	4.7	---	---	---	0.63	0.16
-7	74-99	Btv2	0.06	0.13	0.04	0.02	0.25	3.97	4.22	6	0.07	0.01	4.4	4.6	4.6	---	---	---	1.07	0.26
-8	99-170	B't	0.08	0.12	0.05	0.01	0.26	3.42	3.68	7	0.05	0.01	4.3	4.6	4.6	---	---	---	0.53	0.13
-9	170-185	2C1	0.13	0.29	0.06	0.02	0.50	4.08	4.58	11	0.02	0.01	4.5	4.3	4.4	---	---	---	---	---
-10	185-203	2C2	0.14	0.29	0.07	0.02	0.52	4.61	5.13	10	0.01	0.01	4.4	4.4	4.4	---	---	---	---	---
Florala loamy fine sand:																				
S82FL-131-037-1	0-20	A	0.19	0.09	0.06	0.05	0.39	10.64	11.03	4	2.01	0.08	4.7	4.0	3.8	---	---	---	---	---
-2	20-30	E	0.09	0.03	0.03	0.01	0.16	4.92	5.08	3	0.53	0.06	4.7	4.2	4.1	---	---	---	---	---
-3	30-43	EB	0.12	0.05	0.03	0.01	0.21	3.48	3.69	6	0.28	0.03	4.8	4.2	4.1	---	---	---	---	---
-4	43-61	Bt1	0.11	0.11	0.03	0.01	0.26	3.57	3.83	7	0.12	0.02	5.1	4.2	4.1	---	---	---	0.55	0.15
-5	61-71	Bt2	0.08	0.13	0.03	0.01	0.25	4.47	4.72	5	0.11	0.02	5.0	4.1	4.0	---	---	---	0.76	0.18
-6	71-99	Btv	0.11	0.22	0.04	0.02	0.39	5.42	5.81	7	0.09	0.01	5.1	4.1	4.0	---	---	---	1.26	0.26
-7	99-162	B't1	0.19	0.34	0.04	0.02	0.59	4.07	4.66	13	0.07	0.02	5.1	4.1	3.9	---	---	---	1.50	0.26
-8	162-203	B't2	0.19	0.26	0.03	0.01	0.49	1.96	2.45	20	0.05	0.02	5.0	4.1	3.9	---	---	---	0.30	0.07
Foxworth sand:																				
S79FL-131-023-1	0-8	A1	0.07	0.03	0.05	0.01	0.16	1.18	1.34	12	0.58	0.13	6.9	4.0	3.8	---	---	---	---	---
-2	8-18	A2	0.02	0.02	0.05	0.01	0.10	2.09	2.19	5	0.44	0.02	5.1	4.4	4.5	---	---	---	---	---
-3	18-46	C1	0.01	0.01	0.03	0.00	0.05	1.38	1.43	3	0.17	0.01	5.3	4.6	4.6	---	---	---	---	---
-4	46-84	C2	0.02	0.02	0.02	0.00	0.06	0.92	0.98	6	0.07	0.01	5.4	4.5	4.5	---	---	---	---	---
-5	84-112	C3	0.04	0.03	0.03	0.00	0.10	0.59	0.69	14	0.05	0.01	5.6	4.7	4.6	---	---	---	---	---
-6	112-137	C4	0.04	0.04	0.03	0.00	0.11	1.18	1.29	9	0.23	0.01	5.7	4.6	4.6	---	---	---	---	---
-7	137-175	C5	0.02	0.02	0.03	0.00	0.07	0.92	0.99	7	0.05	0.01	5.6	4.7	4.6	---	---	---	---	---
-8	175-203	C6	0.01	0.01	0.01	0.01	0.04	2.90	2.94	1	0.05	0.01	5.3	4.6	4.7	---	---	---	---	---

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Citrate-dithionite extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ 0.1m (1:2)	KCl in (1:1)	C	Fe	Al	Fe	Al
	Cm		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho/cm				Pct	Pct	Pct	Pct	Pct
Fuquay loamy sand:																				
S79FL-131-005-1	0-13	A	0.18	0.07	0.01	0.03	0.29	4.07	4.36	7	0.77	0.03	5.2	5.0	4.0	---	---	---	---	---
-2	13-30	E1	0.20	0.08	0.01	0.01	0.30	2.58	2.88	10	0.22	0.03	5.3	4.6	4.4	---	---	---	---	---
-3	30-66	E2	0.17	0.16	0.02	0.01	0.36	1.73	2.09	17	0.10	0.02	5.3	4.7	4.5	---	---	---	---	---
-4	66-89	Bt1	0.89	0.27	0.01	0.02	1.19	2.89	3.58	33	0.10	0.02	5.5	4.5	4.8	---	---	---	---	---
-5	89-134	Bt2	0.16	0.21	0.00	0.02	0.39	4.04	4.43	9	0.13	0.02	5.0	4.5	4.5	---	---	---	1.09	0.20
-6	134-155	Btv	0.08	0.10	0.01	0.01	0.20	3.19	3.39	6	0.08	0.02	5.0	4.7	4.9	---	---	---	1.82	0.29
-7	155-188	B't	0.05	0.08	0.04	0.01	0.18	3.06	3.24	6	0.08	0.03	5.0	4.8	5.0	---	---	---	1.99	0.30
-8	188-203	C	0.02	0.03	0.00	0.00	0.05	2.13	2.18	2	0.07	0.02	4.9	4.6	4.8	---	---	---	---	---
Hurricane sand:																				
S80FL-131-032-1	0-13	A	0.18	0.08	0.04	0.02	0.32	3.52	3.84	8	0.63	0.02	4.1	4.2	4.1	---	---	---	---	---
-2	13-36	E1	0.06	0.04	0.04	0.01	0.15	2.32	2.47	6	0.27	0.02	4.7	4.5	4.6	---	---	---	---	---
-3	36-56	E2	0.05	0.04	0.03	0.01	0.13	1.32	1.45	9	0.14	0.01	4.8	4.6	4.8	---	---	---	---	---
-4	56-79	E3	0.07	0.07	0.04	0.01	0.19	1.30	1.49	13	0.10	0.01	4.8	4.6	4.7	---	---	---	---	---
-5	79-119	E4	0.12	0.11	0.03	0.01	0.27	1.50	1.77	15	0.06	0.02	4.4	4.5	4.6	---	---	---	---	---
-6	119-160	E5	0.01	0.01	0.01	0.00	0.03	0.22	0.25	12	0.01	0.01	4.8	5.1	5.1	---	---	---	---	---
-7	160-203	Bh	0.01	0.01	0.00	0.01	0.03	2.78	2.81	1	0.19	0.01	4.3	4.8	4.8	0.22	0.01	0.09	0.07	0.07
Kureb sand:																				
S79FL-131-008-1	0-10	A	0.71	0.18	0.02	0.02	0.93	3.39	4.32	22	0.88	0.03	5.1	4.2	3.9	---	---	---	---	---
-2	10-25	E1	0.03	0.02	0.00	0.00	0.05	0.80	0.85	6	0.11	0.01	5.3	4.5	3.9	---	---	---	---	---
-3	25-43	E2	0.03	0.02	0.01	0.00	0.06	0.67	0.73	8	0.12	0.01	5.5	4.7	4.1	---	---	---	---	---
-4	43-71	B/E	0.05	0.03	0.00	0.01	0.09	2.13	2.22	4	0.22	0.02	5.2	4.7	4.4	0.11	0.10	0.08	0.06	0.16
-5	71-94	Bw1	0.03	0.02	0.00	0.00	0.05	1.78	1.83	3	0.14	0.02	5.2	4.8	4.5	---	---	---	---	---
-6	94-119	Bw2	0.02	0.02	0.01	0.00	0.05	1.07	1.12	4	0.07	0.02	5.3	4.9	4.6	---	---	---	---	---
-7	119-173	Bw3	0.01	0.01	0.00	0.01	0.01	0.80	0.82	2	0.06	0.01	5.3	4.9	4.7	---	---	---	---	---
-8	173-203	C	0.01	0.01	0.00	0.00	0.02	0.53	0.55	4	0.05	0.01	5.5	5.4	5.0	---	---	---	---	---
Lakeland sand:																				
S79FL-131-002-1	0-10	A	0.13	0.04	0.01	0.02	0.20	3.27	3.47	6	0.63	0.06	5.0	4.5	4.0	---	---	---	---	---
-2	10-18	C1	0.04	0.02	0.00	0.01	0.07	1.86	1.93	4	0.25	0.06	5.1	4.7	4.4	---	---	---	---	---
-3	18-107	C2	0.03	0.02	0.00	0.00	0.05	0.93	0.98	5	0.09	0.02	5.0	4.7	4.5	---	---	---	---	---
-4	107-132	C3	0.02	0.02	0.00	0.00	0.04	0.85	0.89	4	0.22	0.02	5.0	4.7	4.5	---	---	---	---	---
-5	132-152	C4	0.02	0.02	0.00	0.00	0.04	0.53	0.57	7	0.13	0.01	4.8	4.6	4.5	---	---	---	---	---
-6	152-203	C5	0.02	0.01	0.00	0.00	0.03	0.32	0.35	9	0.07	0.02	5.0	4.8	4.7	---	---	---	---	---
Leefield loamy sand:																				
S79FL-131-018-1	0-18	Ap	2.33	0.38	0.09	0.10	2.90	3.41	6.31	46	1.42	0.04	5.9	5.2	5.0	---	---	---	---	---
-2	18-38	E1	0.83	0.18	0.09	0.02	1.12	1.33	2.45	46	0.29	0.03	6.2	5.4	5.0	---	---	---	---	---
-3	38-66	E2	0.23	0.07	0.08	0.01	0.39	1.18	1.57	25	0.12	0.03	6.1	4.4	4.2	---	---	---	---	---
-4	66-86	Bt1	0.22	0.04	0.08	0.01	0.35	5.41	5.76	6	0.06	0.03	4.9	4.2	4.2	---	---	---	0.27	0.08
-5	86-102	Bt2	0.10	0.05	0.09	0.01	0.25	2.99	3.24	8	0.08	0.03	4.9	4.2	4.1	---	---	---	0.36	0.09
-6	102-124	Btv	0.06	0.06	0.05	0.01	0.18	2.61	2.79	6	0.06	0.02	4.8	4.2	4.1	---	---	---	0.22	0.06
-7	124-175	B't	0.07	0.05	0.11	0.01	0.24	6.08	6.32	4	0.02	0.04	4.8	4.2	4.0	---	---	---	0.15	0.05
-8	175-203	BC	0.03	0.03	0.07	0.01	0.14	2.09	2.23	6	0.02	0.03	4.8	4.2	4.1	---	---	---	---	---

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Citrate-dithionite extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ 0.1m (1:2)	KCl in (1:1)	C	Fe	Al	Fe	Al
	Cm		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho/cm				Pct	Pct	Pct	Pct	Pct
Leon sand:																				
S79FL-131-024-1	0-13	A1	0.40	0.07	0.06	0.02	0.55	5.12	5.67	10	1.13	0.03	4.6	3.6	3.4	---	---	---	---	---
-2	13-23	A2	0.35	0.07	0.09	0.02	0.53	5.79	6.32	8	1.27	0.04	4.4	3.4	3.3	---	---	---	---	---
-3	23-46	E	0.07	0.02	0.04	0.00	0.13	2.36	2.48	5	0.34	0.02	4.8	3.8	3.6	---	---	---	---	---
-4	46-56	Bh1	0.16	0.04	0.07	0.01	0.28	8.45	8.73	3	1.57	0.03	4.5	3.7	3.6	0.58	0.00	0.08	0.03	0.05
-5	56-68	Bh2	0.10	0.03	0.05	0.01	0.19	30.16	30.35	1	2.17	0.02	4.7	3.9	3.9	1.75	0.05	0.35	0.04	0.28
-6	68-79	BE	0.02	0.01	0.02	0.00	0.05	6.94	6.95	1	0.34	0.02	4.8	4.5	4.5	---	---	---	---	---
-7	79-170	E'	0.01	0.01	0.01	0.00	0.03	1.37	1.40	2	0.04	0.01	5.1	4.9	4.8	---	---	---	---	---
-8	170-203	B'h	0.03	0.02	0.03	0.00	0.08	4.32	4.40	2	0.61	0.03	4.8	4.2	4.1	0.43	0.00	0.04	0.03	0.02
Malbis sandy loam:																				
S79FL-131-007-1	0-15	Ap	0.85	0.23	0.05	0.09	1.22	9.77	10.99	11	1.96	0.06	5.0	4.2	3.8	---	---	---	---	---
-2	15-30	Bt1	0.24	0.12	0.01	0.01	0.38	4.65	5.03	8	0.16	0.03	4.9	4.3	4.1	---	---	---	---	---
-3	30-74	Bt2	0.54	0.15	0.01	0.01	0.71	4.52	5.23	14	0.29	0.02	5.0	4.5	4.3	---	---	---	0.96	0.21
-4	74-96	Bt3	0.06	0.10	0.01	0.01	0.18	5.06	5.24	3	0.09	0.01	4.9	4.4	4.3	---	---	---	1.16	0.23
-5	96-122	Btv1	0.04	0.12	0.00	0.01	0.17	4.79	4.96	3	0.05	0.02	4.8	4.4	4.3	---	---	---	1.68	0.29
-6	122-152	Btv2	0.02	0.10	0.01	0.01	0.14	4.85	4.99	3	0.06	0.02	4.7	4.4	4.3	---	---	---	1.60	0.29
-7	152-203	B't	0.06	0.11	0.01	0.01	0.19	4.18	4.37	4	0.04	0.02	4.7	4.4	4.3	---	---	---	1.42	0.25
Mandarin sand:																				
S80FL-131-033-1	0-20	A	0.16	0.04	0.01	0.01	0.22	1.14	1.36	16	0.22	0.01	4.2	4.0	3.9	---	---	---	---	---
-2	20-53	E	0.04	0.02	0.01	0.00	0.07	0.50	0.57	12	0.08	0.01	4.2	4.2	4.2	---	---	---	---	---
-3	53-58	Bh1	0.06	0.03	0.10	0.01	0.20	19.29	19.49	1	1.77	0.04	3.7	3.8	4.0	1.48	0.01	0.17	0.06	0.16
-4	58-64	Bh2	0.03	0.03	0.06	0.01	0.13	21.36	21.49	1	1.33	0.02	3.9	4.3	4.3	1.57	0.05	0.38	0.06	0.26
-5	64-96	Bh3	0.04	0.01	0.04	0.01	0.10	10.80	10.90	1	0.96	0.02	4.1	4.6	4.6	---	---	---	---	---
-6	96-152	BC	0.03	0.01	0.02	0.01	0.07	3.18	3.25	2	0.30	0.02	4.1	4.6	4.6	---	---	---	---	---
-7	152-203	C	0.05	0.02	0.02	0.01	0.10	0.13	0.23	43	0.06	0.01	4.5	4.9	5.0	---	---	---	---	---
Maurepas muck:																				
S79FL-131-013-1	0-10	Oa1	24.56	4.42	1.01	0.93	30.92	45.88	76.80	40	39.26	0.89	5.1	4.7	4.4	---	---	---	---	---
-2	10-56	Oa2	27.81	8.64	0.53	0.45	37.43	47.34	84.77	45	29.75	1.15	5.0	4.6	4.4	---	---	---	---	---
-3	56-102	Oa3	33.62	11.93	0.57	0.40	46.52	56.93	103.45	45	47.46	0.94	5.0	4.6	4.4	---	---	---	---	---
-4	102-165	Oa4	15.81	5.97	0.69	0.29	22.76	31.05	53.81	42	19.72	0.75	5.1	4.6	4.3	---	---	---	---	---
Newhan sand:																				
S80FL-131-025-1	0-13	A	0.09	0.03	0.01	0.00	0.13	0.89	1.02	13	0.11	0.01	4.7	4.8	4.8	---	---	---	---	---
-2	13-56	C	0.02	0.01	0.01	0.00	0.04	0.65	0.69	6	0.05	0.01	4.9	5.0	4.8	---	---	---	---	---
-3	56-127	C	0.02	0.01	0.01	0.00	0.04	0.71	0.75	5	0.04	0.01	4.9	5.0	4.8	---	---	---	---	---
-4	127-203	C	0.03	0.01	0.01	0.00	0.05	0.22	0.27	19	0.03	0.01	5.4	5.4	5.3	---	---	---	---	---

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Citrate-dithionite extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ 0.1m (1:2)	KCl in (1:1)	C	Fe	Al	Fe	Al
	Cm		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho/cm				Pct	Pct	Pct	Pct	Pct
Orangeburg sandy loam:																				
S79FL-131-009-1	0-25	Ap	0.83	0.37	0.03	0.09	1.32	8.97	10.29	13	1.73	0.06	5.4	4.7	4.1	---	---	---	---	---
-2	25-43	BE	0.44	0.11	0.02	0.02	0.59	5.51	6.10	10	0.40	0.03	5.2	4.6	4.2	---	---	---	---	---
-3	43-64	Bt1	0.79	0.16	0.02	0.02	0.99	4.79	5.78	17	0.20	0.03	5.3	4.7	4.4	---	---	---	0.95	0.20
-4	64-102	Bt2	0.57	0.37	0.03	0.02	0.99	5.51	6.50	15	0.14	0.02	5.2	4.5	4.3	---	---	---	1.48	0.25
-5	102-145	Bt2	0.08	0.17	0.03	0.02	0.30	6.44	6.74	4	0.16	0.02	5.1	4.4	4.2	---	---	---	1.81	0.31
-6	145-175	Bt3	0.06	0.13	0.02	0.01	0.22	5.33	5.55	4	0.09	0.01	5.1	4.4	4.2	---	---	---	1.47	0.25
-7	175-203	Bt4	0.10	0.18	0.02	0.01	0.31	4.88	5.19	6	0.03	0.02	4.9	4.3	4.1	---	---	---	1.22	0.24
Pactolus loamy sand:																				
S79FL-131-020-1	0-15	A1	0.34	0.10	0.17	0.05	0.66	11.13	11.79	6	2.21	0.06	4.8	4.0	4.0	---	---	---	---	---
-2	15-30	A2	0.09	0.04	0.15	0.02	0.30	6.09	6.39	5	0.73	0.06	5.0	4.4	4.4	---	---	---	---	---
-3	30-56	C1	0.07	0.05	0.05	0.03	0.20	4.36	4.56	4	0.09	0.03	4.9	4.3	4.3	---	---	---	---	---
-4	56-71	C2	0.09	0.07	0.08	0.04	0.28	1.90	2.18	13	0.06	0.03	5.0	4.3	4.4	---	---	---	---	---
-5	71-145	C3	0.05	0.02	0.02	0.01	0.10	0.85	0.95	11	0.02	0.02	5.0	4.4	4.4	---	---	---	---	---
-6	145-203	C4	0.07	0.03	0.04	0.01	0.15	1.44	1.59	9	0.05	0.02	4.9	4.3	4.4	---	---	---	0.50	0.13
Pamlico muck:																				
S79FL-131-014-1	0-5	Oa1	2.91	1.32	0.56	0.66	5.45	114.02	119.47	5	36.43	0.24	3.6	3.0	2.8	---	---	---	---	---
-2	5-30	Oa2	0.20	0.58	0.35	0.16	1.29	119.51	120.80	1	38.68	0.07	3.8	3.0	2.6	---	---	---	---	---
-3	30-76	Oa2	0.17	0.42	0.30	0.08	0.97	99.51	100.48	1	28.32	0.06	3.8	3.0	2.7	---	---	---	---	---
-4	76-140	C	0.04	0.02	0.02	0.00	0.08	4.51	4.59	2	0.79	0.04	4.3	3.7	3.6	---	---	---	---	---
Pickney sand:																				
S80FL-131-027-1	0-51	A	0.04	0.02	0.03	0.01	0.10	18.06	18.16	1	1.54	0.04	4.0	4.3	4.3	---	---	---	---	---
-2	51-94	A	0.06	0.04	0.03	0.01	0.14	4.10	4.24	3	1.03	0.02	4.2	4.6	4.5	---	---	---	---	---
-3	94-165	C1	0.06	0.02	0.03	0.01	0.12	14.90	15.02	1	0.67	0.02	4.1	4.6	4.7	---	---	---	---	---
-4	165-203	C2	0.04	0.02	0.03	0.00	0.09	2.45	2.54	4	0.77	0.01	4.3	4.6	4.5	---	---	---	---	---
Resota sand:																				
S82FL-131-041-1	0-8	A	0.55	0.21	0.03	0.05	0.84	10.01	10.85	8	1.07	0.07	4.1	3.3	2.8	---	---	---	---	---
-2	8-33	E	0.02	0.02	0.01	0.00	0.05	0.99	1.04	5	0.13	0.03	4.8	4.1	3.6	---	---	---	---	---
-3	33-48	Bw1	0.02	0.02	0.03	0.01	0.08	2.94	3.02	3	0.27	0.04	4.9	4.4	4.2	0.23	0.08	0.12	0.15	0.07
-4	48-79	Bw2	0.03	0.02	0.02	0.01	0.08	2.18	2.26	4	0.17	0.03	5.0	4.6	4.4	0.27	0.08	0.15	0.11	0.06
-5	79-102	Bw3	0.03	0.01	0.02	0.00	0.06	1.33	1.39	4	0.10	0.03	5.0	4.6	4.4	0.22	0.05	0.10	0.09	0.04
-6	102-135	Bw4	0.03	0.02	0.01	0.00	0.06	0.93	0.99	6	0.07	0.02	5.1	4.7	4.4	0.24	0.03	0.07	0.07	0.03
-7	135-203	C	0.01	0.01	0.01	0.00	0.03	0.23	0.26	12	0.06	0.02	5.4	4.8	4.5	---	---	---	---	---
Rutlege fine sand:																				
S80FL-131-028-1	0-43	A	0.03	0.04	0.04	0.02	0.13	26.38	26.51	---	2.13	0.04	3.4	3.7	3.8	---	---	---	---	---
-2	43-56	Cg1	0.03	0.01	0.03	0.00	0.07	2.45	2.52	3	0.30	0.02	4.1	4.7	4.8	---	---	---	---	---
-3	56-152	Cg2	0.04	0.01	0.01	0.00	0.06	0.99	1.05	6	0.09	0.01	4.1	4.9	4.9	---	---	---	---	---
-4	152-203	Cg3	0.02	0.01	0.02	0.00	0.05	0.51	0.56	9	0.04	0.02	4.0	4.8	4.9	---	---	---	---	---

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Citrate-dithionite extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ 0.1m (1:2)	KCl in (1:1)	C	Fe	Al	Fe	Al
	Cm		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho/cm				Pct	Pct	Pct	Pct	Pct
Shubuta fine sandy loam:																				
S82FL-131-042-1	0-15	A	1.62	0.66	0.06	0.18	2.52	---	---	---	2.50	0.04	4.6	4.2	4.0	---	---	---	---	---
-2	15-28	E	0.55	0.62	0.05	0.08	1.30	---	---	---	0.66	0.02	4.8	4.2	4.0	---	---	---	---	---
-3	28-43	Bt1	0.37	1.60	0.08	0.23	2.28	---	---	---	0.56	0.01	4.5	3.9	3.7	---	---	---	---	---
-4	43-86	Bt2	0.07	1.60	0.08	0.21	1.96	---	---	---	0.20	0.01	4.7	3.9	3.6	---	---	---	---	---
-5	86-130	Bt3	0.05	1.32	0.08	0.22	1.67	---	---	---	0.12	0.01	4.7	3.8	3.6	---	---	---	---	---
-6	130-175	Bt4	0.06	1.48	0.12	0.31	1.97	---	---	---	0.10	0.01	4.5	3.8	3.5	---	---	---	---	---
-7	175-203	Bt5	0.07	1.65	0.12	0.38	2.22	---	---	---	0.11	0.01	4.7	3.6	3.4	---	---	---	---	---
Stilson loamy sand:																				
S79FL-131-019-1	0-18	Ap	1.22	0.23	0.11	0.23	1.79	3.92	5.71	31	0.91	0.07	5.7	5.0	4.6	---	---	---	---	---
-2	18-28	E1	0.71	0.16	0.08	0.08	1.03	1.37	2.40	43	0.32	0.04	5.9	5.2	4.8	---	---	---	---	---
-3	28-41	E2	0.32	0.15	0.06	0.04	0.57	1.31	1.88	30	0.20	0.03	5.6	4.8	4.4	---	---	---	---	---
-4	41-64	E3	0.33	0.11	0.07	0.02	0.53	1.63	2.16	25	0.10	0.03	5.2	4.5	4.3	---	---	---	---	---
-5	64-81	Bt	0.36	0.05	0.08	0.02	0.51	2.29	2.80	18	0.08	0.03	4.9	4.3	4.2	---	---	---	0.29	0.09
-6	81-109	Btv	0.18	0.06	0.06	0.02	0.32	3.79	4.11	8	0.06	0.02	4.9	4.2	4.1	---	---	---	0.32	0.10
-7	109-135	B't1	0.06	0.04	0.07	0.01	0.18	4.05	4.23	4	0.05	0.03	4.7	4.2	4.0	---	---	---	0.22	0.09
-8	135-203	B't2	0.03	0.03	0.03	0.01	0.10	2.42	2.52	4	0.02	0.02	4.6	4.2	4.1	---	---	---	0.15	0.05
Tifton fine sandy loam:																				
S79FL-131-010-1	0-10	Ac1	0.40	0.06	0.04	0.04	0.54	11.87	12.41	4	1.91	0.06	4.9	4.1	3.9	---	---	---	---	---
-2	10-23	Ac2	0.14	0.05	0.02	0.02	0.23	6.54	6.77	3	0.89	0.04	5.0	4.3	4.1	---	---	---	---	---
-3	23-33	BEc	0.15	0.06	0.03	0.01	0.25	5.33	5.88	4	0.42	0.04	4.8	4.3	4.1	---	---	---	0.91	0.21
-4	33-68	Btc	0.25	0.20	0.02	0.01	0.48	6.19	6.67	7	0.23	0.03	4.9	4.4	4.3	---	---	---	1.72	0.45
-5	68-130	Btcv1	0.05	0.11	0.02	0.01	0.19	6.71	6.90	3	0.12	0.02	4.9	4.6	4.3	---	---	---	2.07	0.38
-6	130-145	Btcv2	0.02	0.03	0.01	0.00	0.06	5.51	5.57	1	0.06	0.02	4.7	4.3	4.2	---	---	---	2.39	0.47
-7	145-203	Bt	0.08	0.11	0.01	0.01	0.21	5.85	6.06	3	0.04	0.02	4.9	4.3	4.0	---	---	---	---	---
Troup sand:																				
S79FL-131-006-1	0-18	Ap	0.05	0.02	0.04	0.01	0.12	3.47	3.59	3	0.51	0.03	5.2	4.5	4.0	---	---	---	---	---
-2	18-41	E1	0.04	0.02	0.02	0.01	0.09	1.65	1.74	5	0.18	0.03	5.0	4.6	4.4	---	---	---	---	---
-3	41-76	E2	0.05	0.02	0.01	0.00	0.08	1.06	1.14	6	0.12	0.02	5.0	4.6	4.4	---	---	---	---	---
-4	76-99	E3	0.07	0.03	0.01	0.00	0.11	1.06	1.17	9	0.07	0.02	5.0	4.5	4.5	---	---	---	---	---
-5	99-117	E4	0.09	0.04	0.01	0.01	0.15	1.38	1.53	10	0.09	0.02	5.1	4.5	4.5	---	---	---	---	---
-6	117-130	E5	0.10	0.07	0.02	0.01	0.20	1.33	1.53	13	0.08	0.02	5.1	4.5	4.5	---	---	---	---	---
-7	130-140	Bt1	0.19	0.15	0.02	0.01	0.37	2.05	2.42	15	0.12	0.02	5.0	4.6	4.5	---	---	---	0.95	0.13
-8	140-203	Bt2	0.13	0.18	0.03	0.01	0.37	3.46	3.83	10	0.16	0.02	5.0	4.4	4.4	---	---	---	1.70	0.20

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases					Extractable acidity	Sum of cations	Base saturation	Organic carbon	Electrical conductivity	pH			Pyrophosphate extractable			Citrate-dithionite extractable	
			Ca	Mg	Na	K	Sum						H_2O (1:1)	$CaCl_2$ 0.1m (1:2)	KCl 1n (1:1)	C	Fe	Al	Fe	Al
	Cm		-----Milliequivalents/100 grams of soil-----							Pct	Pct	Mmho/cm				Pct	Pct	Pct	Pct	Pct
Yemassee fine sandy loam:																				
S82FL-131-043-1	0-8	A1	7.42	1.73	0.06	0.05	9.26	---	---	---	1.93	0.06	4.6	5.0	4.6	---	---	---	---	---
-2	8-15	A2	3.62	1.03	0.05	0.03	4.73	---	---	---	1.14	0.04	4.8	5.1	4.8	---	---	---	---	---
-3	15-28	BA	0.67	0.45	0.04	0.04	1.20	---	---	---	0.35	0.03	4.5	4.0	3.8	---	---	---	---	---
-4	28-41	Bt1	0.36	0.33	0.06	0.06	0.81	---	---	---	0.24	0.03	4.4	3.8	3.7	---	---	---	0.89	0.16
-5	41-71	Bt2	0.31	0.28	0.06	0.08	0.73	---	---	---	0.27	0.02	4.3	3.8	3.7	---	---	---	1.21	0.18
-6	71-119	Bt3	0.31	0.27	0.06	0.07	0.71	---	---	---	0.20	0.02	4.3	3.7	3.7	---	---	---	1.12	0.10
-7	119-165	C	0.41	0.30	0.06	0.05	0.82	---	---	---	0.10	0.02	4.4	3.8	3.7	---	---	---	---	---
-8	165-203	C	0.85	0.62	0.06	0.09	1.62	---	---	---	0.06	0.02	4.5	3.8	3.7	---	---	---	---	---

TABLE 20.--CLAY MINERALOGY OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Clay minerals					
			Montmorillonite	14 angstrom intergrade	Kaolinite	Gibbsite	Quartz	Mica
	Cm		Pct	Pct	Pct	Pct	Pct	Pct
Angie sandy loam:								
S79FL-131-022-1	0-10	A	13	27	34	0	26	0
-3	15-38	Bt1	33	16	34	0	13	4
-5	68-89	Bt3	35	20	33	0	10	2
-7	140-203	Cg	67	0	13	0	14	6
Blanton sand:								
S80FL-131-034-1	0-15	A	0	64	18	0	18	0
-4	89-140	E3	0	69	15	0	16	0
-7	178-190	Bt	0	48	44	0	8	0
Bonifay loamy sand:								
S79FL-131-004-1	0-18	A	0	52	12	17	19	0
-3	28-56	E2	0	48	12	17	23	0
-6	137-183	Btv	0	37	11	43	9	0
Chipley sand:								
S79FL-131-021-1	0-15	A	0	60	18	0	22	0
-4	79-114	C3	0	49	11	10	30	0
-5	114-203	Cg	0	51	12	10	27	0
Dothan loamy sand:								
S80FL-131-029-1	0-20	Ap	0	34	57	9	0	0
-3	28-91	Bt2	0	32	55	13	0	0
-6	152-203	B't	0	11	71	9	0	9
Escambia sandy loam:								
S80FL-131-031-1	0-15	Ap	0	55	28	0	17	0
-5	43-58	Bt	0	62	27	0	11	0
-8	99-170	B't	0	44	47	0	9	0
-10	185-203	2C2	0	15	64	0	13	8
Florala loamy fine sand:								
S82FL-131-037-1	0-20	A	0	41	47	0	12	0
-5	61-71	Bt2	8	29	55	0	8	0
-8	162-203	B't1	6	15	67	0	8	4
Foxworth sand:								
S79FL-131-023-1	0-8	A1	0	51	15	0	34	0
-4	46-84	C2	0	49	12	0	39	0
-8	175-203	C6	0	42	12	0	46	0
Fuquay loamy sand:								
S79FL-131-005-1	0-13	A	0	59	12	18	11	0
-5	89-134	Bt2	0	39	17	34	10	0
-6	134-155	Btv	0	35	16	45	[illegible]	0
-8	188-203	C	0	30	40	24	[illegible]	0
Hurricane sand:								
S80FL-131-032-1	0-13	A	0	63	12	0	25	0
-4	56-79	E3	0	66	10	0	24	0
-7	160-203	Bh	0	39	41	0	20	0
Kureb sand:								
S79FL-131-008-1	0-10	A	21	79	0	0	[illegible]	0
-4	43-71	B/E	0	85	0	0	15	0
-8	173-203	C	0	76	0	0	24	0

TABLE 20.--CLAY MINERALOGY OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Clay minerals: Montmorillonite	Clay minerals: 14 angstrom intergrade	Clay minerals: Kaolinite	Clay minerals: Gibbsite	Clay minerals: Quartz	Clay minerals: Mica
	Cm		Pct	Pct	Pct	Pct	Pct	Pct
Lakeland sand:								
S79FL-131-002-1	0-10	A	0	59	20	0	21	0
-2	10-18	C1	10	64	10	0	16	0
-3	18-107	C2	8	66	14	0	12	0
-6	152-203	C5	0	70	15	0	15	0
Leefield loamy sand:								
S79FL-131-018-1	0-18	Ap	0	41	37	0	22	0
-5	86-102	Bt2	7	5	85	0	3	0
-8	175-203	BC	0	3	91	0	4	0
Leon sand:								
S79FL-131-024-1	0-13	A1	21	4	5	0	70	0
-4	46-56	Bh1	34	7	5	0	54	0
-7	79-170	E'	3	39	13	0	45	0
-8	170-203	Bh	4	20	7	0	69	0
Malbis sandy loam:								
S79FL-131-007-1	0-15	Ap	0	66	22	0	12	0
-3	30-74	Bt2	0	45	19	16	20	0
-4	74-96	Bt3	0	48	28	10	14	0
-7	152-203	B't	0	38	38	16	8	0
Mandarin sand:								
S80FL-131-003-1	0-20	A	43	0	10	0	47	0
-3	53-58	Bh1	0	55	15	0	30	0
-7	152-203	C	0	40	8	0	52	0
Newhan sand:								
S80FL-131-025-1	0-13	A	0	0	0	0	100	0
-3	56-127	C	0	0	0	0	100	0
-4	127-203	C	0	0	0	0	100	0
Orangeburg sandy loam:								
S79FL-131-009-1	0-25	Ap	0	70	21	0	9	0
-3	43-64	Bt1	0	52	21	14	13	0
-4	64-102	Bt2	0	42	28	19	11	0
-7	175-203	Bt4	0	57	43	0	0	0
Pactolus loamy sand:								
S79FL-131-020-1	0-15	A1	0	54	16	0	30	0
-5	71-145	C3	29	27	22	0	22	0
-6	145-203	C4	27	27	36	0	10	0
Pickney sand:								
S80FL-131-027-1	0-51	A	0	51	9	0	40	0
-4	165-203	C2	0	32	9	0	59	0
Resota sand:								
S82FL-131-041-1	0-8	A	53	0	13	0	34	0
-4	48-79	Bw2	16	55	15	0	14	0
-7	135-203	C	21	47	9	0	23	0
Rutlege fine sand:								
S80FL-131-028-1	0-43	A	0	50	14	0	36	0
-3	56-152	Cg2	0	62	11	0	27	0
-4	152-203	Cg3	20	45	9	0	26	0

TABLE 20.--CLAY MINERALOGY OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Clay minerals					
			Montmorillonite	14 angstrom intergrade	Kaolinite	Gibbsite	Quartz	Mica
	Cm		Pct	Pct	Pct	Pct	Pct	Pct
Shubuta fine sandy loam:								
S82FL-131-042-1	0-15	A	0	39	43	0	10	8
-3	28-43	Bt1	0	28	54	0	10	8
-5	86-130	Bt3	0	19	50	0	13	18
-7	175-203	Bt5	34	8	25	0	16	17
Stilson loamy sand:								
S79FL-131-019-1	0-18	Ap	0	37	42	0	21	0
-6	81-109	Btv	0	7	90	0	3	0
-8	135-203	B't2	4	5	88	0	3	0
Tifton fine sandy loam:								
S79FL-131-010-1	0-10	Ac1	0	47	25	17	11	0
-3	23-33	BEc	0	51	27	14	8	0
-4	33-68	Btc	0	34	32	26	8	0
-7	145-203	Bt	0	8	80	8	4	0
Troup sand:								
S79FL-131-006-1	0-18	Ap	0	47	21	16	16	0
-4	76-99	E3	0	47	27	20	6	0
-7	130-140	Bt1	0	42	33	21	4	0
-8	140-203	Bt2	0	35	34	21	9	0
Yemassee fine sandy loam:								
S82FL-131-043-1	0-8	A1	10	38	39	0	13	0
-4	28-41	Bt1	24	26	42	0	8	0
-6	71-119	Bt3	27	19	44	0	10	0
-8	165-203	C	43	12	36	0	9	0

TABLE 21.--ENGINEERING INDEX TEST DATA

[Tests performed by the Florida Department of Transportation (FDOT) in cooperation with the U.S. Bureau of Public Roads, in accordance with standard procedures of the American Association of State Highway and Transportation Officials (AASHTO). See the section "Soil series and morphology" for location of pedon sampled. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	FDOT report number	Classification		Mechanical analysis 2/							Liquid limit	Plasticity index	Moisture 3/ density	
		AASHTO 1/	Unified	Percentage smaller than--			Percentage smaller than--						Maximum dry density	Optimum moisture
				No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm				
											Pct		Lb/ft^3	Pct
Angie sandy loam:														
S79FL-131-022(1-6)														
Bt3 - - - - - - 27-35	24	A-7-6(24)	CH	100	97	70	63	53	45	42	58	36	96.6	20.5
Cg - - - - - - 35-80	25	A-7-5(53)	CH	100	99	90	87	80	71	66	87	57	105.0	25.3
Blanton sand:														
S80FL-131-034(1-8)														
E3 - - - - - - 35-55	37	A-2-4(0)	SM	4/	96	19	13	6	3	2	---	NP	109.3	12.0
Bonifay loamy sand:														
S79FL-131-004(1-7)														
E3 - - - - - - 22-44	4	A-2-4(0)	SM	100	82	19	16	12	7	5	---	NP	121.0	9.6
Btv - - - - - - 54-72	5	A-2-4(0)	SM-SC	100	79	22	20	16	12	9	20	4	120.4	11.6
Chipley sand:														
S79FL-131-021(1-5)														
C3 - - - - - - 31-45	23	A-3(0)	SP-SM	100	81	7	6	3	0	0	---	NP	110.7	---
Dothan loamy sand:														
S80FL-131-029(1-6)														
Bt2 - - - - - - 11-36	32	A-2-4(0)	SC	4/	62	25	24	21	16	15	25	9	118.5	12.4
Escambia sandy loam:														
S80FL-131-031(1-10)														
Btv2 - - - - - 29-39	34	A-4(0)	SM	4/	81	39	34	25	15	13	---	NP	123.8	9.8
Florala loamy sand:														
S82FL-131-037(1-8)														
B't1 - - - - - 39-64	40	A-6(1)	SC	100	4/	39	34	27	21	17	32	13	115.2	13.8
Foxworth sand:														
S79FL-131-023(1-8)														
C2 - - - - - - 10-31	26	A-3(0)	SP-SM	100	90	9	6	3	0	0	---	NP	107.9	13.2
Fuquay loamy sand:														
S79FL-131-005(1-8)														
Bt1 - - - - - - 26-35	6	A-2-4(0)	SM	100	78	24	22	17	12	9	---	NP	124.8	9.4
Bt2 - - - - - - 35-53	7	A-2-4(0)	SM	100	80	30	27	22	18	16	---	NP	118.3	12.3

TABLE 21.--ENGINEERING INDEX TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	FDOT report number	Classification		Mechanical analysis 2/							Liquid limit	Plasticity index	Moisture 3/ density	
		AASHTO 1/	Unified	Percentage smaller than--			Percentage smaller than--						Maximum dry density	Optimum moisture
				No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm				
											Pct		Lb/ft^3	Pct
Hurricane sand: S80FL-131-032(1-7) E2 - - - - - 14-22	35	A-3(0)	SP-SM	4/	77	7	7	4	1	0	---	NP	107.3	12.1
Kureb sand: S79FL-131-008(1-8) Bw1 - - - - - 28-37	11	A-3(0)	SP-SM	100	94	5	5	4	3	2	---	NP	104.2	13.1
Lakeland sand: S79FL-131-002(1-6) C2 - - - - - - 7-42	1	A-3(0)	SP-SM	100	81	6	6	5	2	1	---	NP	109.4	11.6
Leefield loamy sand: S79FL-131-018(1-8) E2 - - - - - - 15-26	17	A-2-4(0)	SM	100	91	21	18	16	10	9	---	NP	117.7	11.4
Leon sand: S79FL-131-024(1-8) E - - - - - - - 9-18	27	A-3(0)	SP-SM	100	86	7	6	4	0	0	---	NP	105.2	13.3
Malbis fine sandy loam: S79FL-131-007(1-7) Btv1 - - - - 29-38	10	A-4(1)	SM-SC	100	89	48	40	28	20	15	24	7	118.4	12.5
Mandarin sand: S80FL-131-033(1-7) E - - - - - - - 8-21	36	A-3(0)	SP	4/	97	3	2	0	0	0	---	NP	97.5	14.8
Newhan sand: S80FL-131-025(1-4) C - - - - - - - 5-80	28	A-3(0)	SP	4/	91	1	0	0	0	0	---	NP	97.8	15.6
Orangeburg sandy loam: S79FL-131-009(1-7) Bt2 - - - - - 25-57	12	A-6(2)	SC	100	81	41	39	35	30	25	34	14	112.9	15.3
Pactolus loamy sand: S79FL-131-020(1-6) C3 - - - - - - 28-57	21	A-3(0)	SP-SM	100	81	8	7	6	3	2	---	NP	110.2	11.1
C4 - - - - - - 57-80	22	A-2-4(0)	SM	100	82	13	11	8	6	5	---	NP	112.1	11.3

TABLE 21.--ENGINEERING INDEX TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	FDOT report number	Classification		Mechanical analysis 2/							Liquid limit	Plasticity index	Moisture density 3/	
		AASHTO 1/	Unified	Percentage smaller than--			Percentage smaller than--						Maximum dry density	Optimum moisture
				No. 10	No. 40	No. 200	.05 mm	.02 mm	.005 mm	.002 mm				
											Pct		Lb/ft^3	Pct
Resota sand: S82FL-131-041(1-7)														
Bw2 - - - - - - 19-31	46	A-2-4(0)	SM	100	94	---	12	5	2	2	---	NP	106.6	12.5
Rutlege fine sand: S80FL-131-028(1-4)														
A - - - - - - - 0-17	30	A-2-4(0)	SM	4/	4/	14	7	0	0	0	---	NP	104.4	15.5
Cg3 - - - - - - 60-80	31	A-3(0)	SP	4/	4/	8	5	2	1	1	---	NP	99.8	15.7
Shubuta sandy loam: S80FL-131-042(1-7)														
Bt2 - - - - - - 17-34	48	A-7-5(11)	CH	100	99	61	56	54	49	46	62	17	93.9	25.0
Stilson loamy sand: S79FL-131-019(1-8)														
E3 - - - - - - 16-25	19	A-2-4(0)	SM	100	86	22	19	15	10	8	---	NP	119.2	11.5
B't2 - - - - - 53-80	20	A-2-4(0)	SM	100	99	23	24	23	20	20	---	NP	112.9	14.5
Tifton fine sandy loam: S79FL-131-010(1-7)														
Btc - - - - - 13-27	13	A-2-4(0)	SM	77	64	29	23	17	13	12	---	NP	122.7	10.0
Btcv1 - - - - 27-51	14	A-4(0)	SM	100	81	40	35	28	19	15	---	NP	120.5	13.0
Troup sand: S79FL-131-006(1-8)														
E2 - - - - - - 16-30	8	A-2-4(0)	SM	100	4/	16	14	10	7	5	---	NP	116.8	9.6
Bt2 - - - - - - 55-80	9	A-2-6(1)	SC	100	88	32	31	28	25	23	35	18	115.6	13.9
Yemassee fine sandy loam: S82FL-131-043(1-7)														
Bt2 - - - - - 16-28	49	A-6(4)	SC	100	99	45	40	32	28	25	32	18	109.3	16.3

1/ Based on AASHTO Designation M 145-73 (1).

2/ Mechanical analyses according to AASHTO Designation T88-78 (1). Results by this procedure differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-sized fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from the calculations of grain-sized fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

3/ Based on AASHTO Designation T99-74 (1).

4/ Data were not available, or the data were available but were expected of being in error.

TABLE 22.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Albany	Loamy, siliceous, thermic Grossarenic Paleudults
*Angie	Clayey, mixed, thermic Aquic Paleudults
Arents	Arents
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Bigbee	Thermic, coated Typic Quartzipsamments
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Bonifay	Loamy, siliceous, thermic Grossarenic Plinthic Paleudults
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Chipley	Thermic, coated Aquic Quartzipsamments
Corolla	Thermic, uncoated Aquic Quartzipsamments
Cowarts	Fine-loamy, siliceous, thermic Typic Hapludults
Dirego	Sandy or sandy-skeletal, siliceous, euic, thermic Terric Sulfihemists
Dorovan	Dysic, thermic Typic Medisaprists
Dothan	Fine-loamy, siliceous, thermic Plinthic Paleudults
Duckston	Siliceous, thermic Typic Psammaquents
Eglin	Sandy, siliceous, thermic Grossarenic Entic Haplohumods
Escambia	Coarse-loamy, siliceous, thermic Plinthaquic Paleudults
Florala	Coarse-loamy, siliceous, thermic Plinthaquic Paleudults
Foxworth	Thermic, coated Typic Quartzipsamments
Fuquay	Loamy, siliceous, thermic Arenic Plinthic Paleudults
Garcon	Loamy, siliceous, thermic Arenic Hapludults
Hurricane	Sandy, siliceous, thermic Grossarenic Entic Haplohumods
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Kenansville	Loamy, siliceous, thermic Arenic Hapludults
Kinston	Fine-loamy, siliceous, acid, thermic Typic Fluvaquents
Kureb	Thermic, uncoated Spodic Quartzipsamments
Lakeland	Thermic, coated Typic Quartzipsamments
Leefield	Loamy, siliceous, thermic Arenic Plinthaquic Paleudults
Leon	Sandy, siliceous, thermic Aeric Haplaquods
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Malbis	Fine-loamy, siliceous, thermic Plinthic Paleudults
Mandarin	Sandy, siliceous, thermic Typic Haplohumods
Maurepas	Euic, thermic Typic Medisaprists
Newhan	Thermic, uncoated Typic Quartzipsamments
Norfolk	Fine-loamy, siliceous, thermic Typic Paleudults
Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Osier	Siliceous, thermic Typic Psammaquents
Pactolus	Thermic, coated Aquic Quartzipsamments
Pamlico	Sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists
Pantego	Fine-loamy, siliceous, thermic Umbric Paleaquults
Pickney	Sandy, siliceous, thermic Cumulic Humaquepts
Resota	Thermic, uncoated Spodic Quartzipsamments
Rutlege	Sandy, siliceous, thermic Typic Humaquepts
Shubuta	Clayey, mixed, thermic Typic Paleudults
Stilson	Loamy, siliceous, thermic Arenic Plinthic Paleudults
*Tifton	Fine-loamy, siliceous, thermic Plinthic Paleudults
Troup	Loamy, siliceous, thermic Grossarenic Paleudults
Yemassee	Fine-loamy, siliceous, thermic Aeric Ochraquults

* The soil is a taxadjunct to the series. See text for description of those characteristics of the soil that are outside the range of the series.

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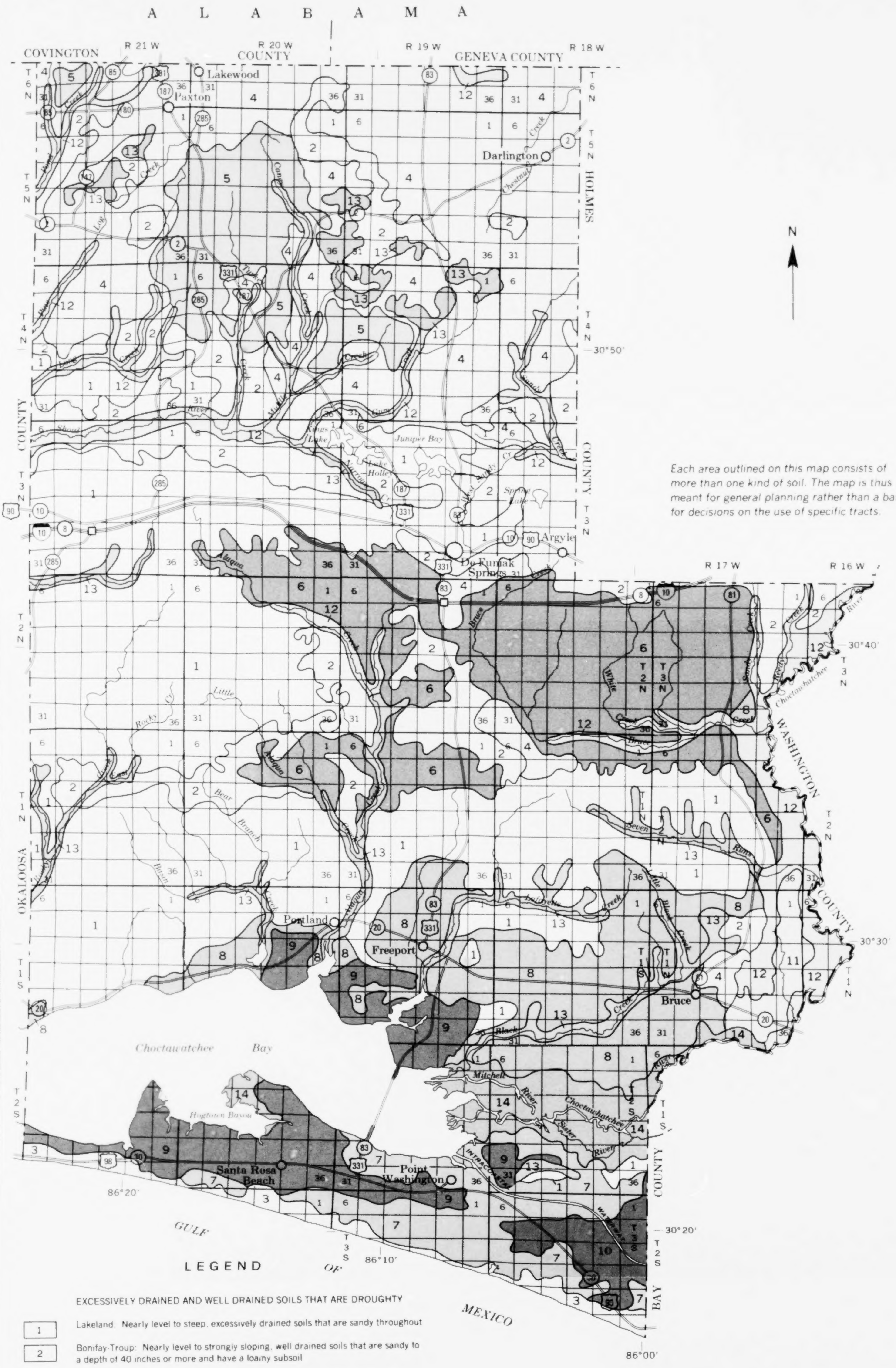
MAPS

TRANSPOSED TO

END OF VOLUME


A L A B A M A
COVINGTON COUNTY
GENEVA COUNTY
HOLMES COUNTY
WASHINGTON COUNTY
OKALOOSA COUNTY
BAY COUNTY
R 21 W
R 20 W
R 19 W
R 18 W
R 17 W
R 16 W
T 6 N
T 5 N
T 4 N
T 3 N
T 2 N
T 1 N
T 1 S
T 2 S
T 3 S
N
30°50'
30°40'
30°30'
30°20'
86°20'
86°10'
86°00'
Lakewood
Paxton
Darlington
Argyle
De Funiak Springs
Portland
Freeport
Bruce
Santa Rosa Beach
Point Washington
Choctawatchee Bay
Hogtown Bayou
GULF OF MEXICO
Juniper Bay
Kings Lake
Lake Holley
Spring Lake
Alaqua Creek
Choctawhatchee River
Mitchell River
Black Creek
Seven Runs
White Creek
Bruce Creek
Shoal River
INTRACOASTAL WATERWAY

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

LEGEND

EXCESSIVELY DRAINED AND WELL DRAINED SOILS THAT ARE DROUGHTY

1	Lakeland: Nearly level to steep, excessively drained soils that are sandy throughout
2	Bonifay-Troup: Nearly level to strongly sloping, well drained soils that are sandy to a depth of 40 inches or more and have a loamy subsoil
3	Kureb-Lakeland-Newhan: Nearly level to very steep, excessively drained soils that are sandy throughout

WELL DRAINED AND MODERATELY WELL DRAINED SOILS THAT HAVE A LOAMY SUBSOIL

4	Fuquay-Dothan-Troup: Nearly level to sloping, well drained, sandy soils that have a loamy subsoil at various depths
5	Malbis-Fuquay: Nearly level to sloping, moderately well drained and well drained, loamy and sandy soils that have a loamy subsoil at a depth of less than 20 inches or at a depth of 20 to 40 inches
6	Norfolk-Shubuta-Bonneau: Nearly level to strongly sloping, well drained, sandy and loamy soils that have a loamy or clayey subsoil at a depth of less than 20 inches or at a depth of 20 to 40 inches

MODERATELY WELL DRAINED TO VERY POORLY DRAINED SOILS THAT ARE MUCKY, SANDY, OR LOAMY

7	Hurricane-Pamlico: Nearly level to gently sloping, somewhat poorly drained to very poorly drained soils; some are organic underlain by sandy material, and others are sandy throughout
8	Chipley-Foxworth-Albany: Nearly level to gently sloping, somewhat poorly drained or moderately well drained soils; some are sandy throughout, and others are sandy and have a loamy subsoil below a depth of 40 inches
9	Rutlege-Leon: Nearly level, very poorly drained and poorly drained soils that are sandy throughout
10	Leon-Pamlico: Level, poorly drained and very poorly drained soils; some are sandy throughout, and others are muck underlain by sandy material

SOMEWHAT POORLY DRAINED TO VERY POORLY DRAINED SOILS THAT ARE SUBJECT TO FLOODING OR PONDING

11	Garcon: Level, somewhat poorly drained soils that are sandy to a depth of 20 to 40 inches and have a loamy subsoil
12	Kinston-Bibb: Level, poorly drained soils that are stratified loamy and sandy material
13	Dorovan-Pamlico: Nearly level, very poorly drained, deep, mucky soils and mucky soils that are underlain by sandy material
14	Maurepas-Dirego: Nearly level, very poorly drained, deep, mucky soils and mucky soils that are underlain by sandy material

COMPILED 1986

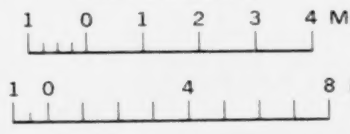
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
UNIVERSITY OF FLORIDA
INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
AGRICULTURAL EXPERIMENT STATIONS, SOIL SCIENCE DEPARTMENT
FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

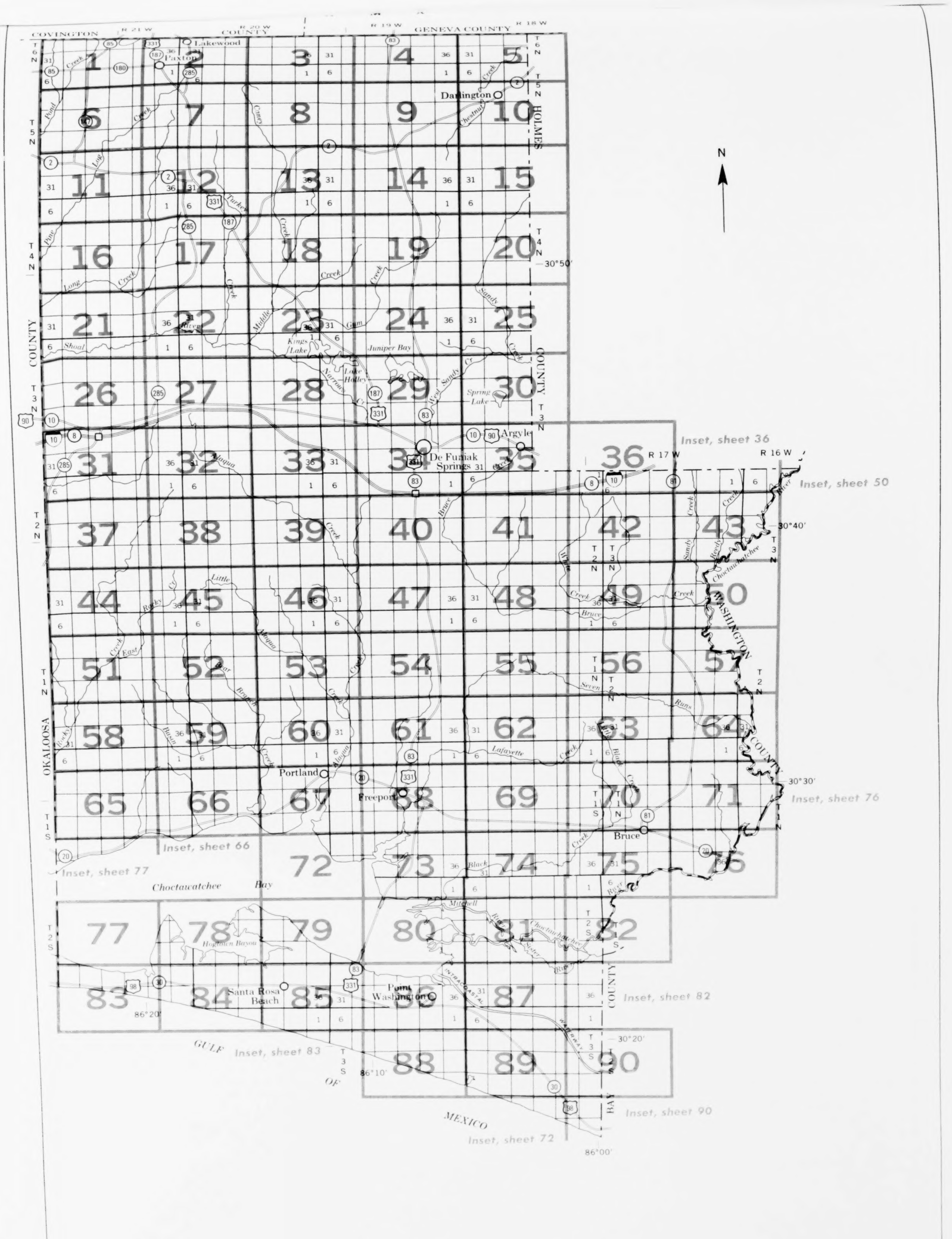
GENERAL SOIL MAP
WALTON COUNTY
FLORIDA

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Scale 1:253,440

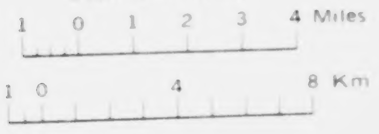

1 0 1 2 3 4 Miles
1 0 4 8 Km



COVINGTON COUNTY
GENEVA COUNTY
HOLMES COUNTY
OKALOOSA COUNTY
WASHINGTON COUNTY
BAY COUNTY
R 21 W
R 20 W
R 19 W
R 18 W
R 17 W
R 16 W
T 6 N
T 5 N
T 4 N
T 3 N
T 2 N
T 1 N
T 1 S
T 2 S
T 3 S
Lakewood
Paxton
Darlington
Argyle
De Funiak Springs
Portland
Freeport
Bruce
Santa Rosa Beach
Point Washington
Kings Lake
Lake Holley
Juniper Bay
Spring Lake
Choctawhatchee Bay
Hogtown Bayou
Choctawhatchee River
Intracoastal Waterway
GULF OF MEXICO
30°50′
30°40′
30°30′
30°20′
86°20′
86°10′
86°00′
Inset, sheet 36
Inset, sheet 50
Inset, sheet 76
Inset, sheet 66
Inset, sheet 77
Inset, sheet 82
Inset, sheet 83
Inset, sheet 90
Inset, sheet 72
N

INDEX TO MAP SHEETS
WALTON COUNTY
FLORIDA

Scale 1:253,440



1 0 1 2 3 4 Miles
1 0 4 8 Km

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WALTON COUNTY, FLORIDA

UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
AGRICULTURAL EXPERIMENT STATIONS, SOIL SCIENCE DEPARTMENT
FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

SOIL LEGEND

The recommended publication symbols are numeric. Soils without a slope designation in the name are level or nearly level or miscellaneous areas.

NUMERICAL LISTING

NAME	SYMBOL
1	Albany-Pactolus loamy sands, 0 to 5 percent slopes
2	Bonifay loamy sand, 0 to 5 percent slopes
3	Bonifay loamy sand, 5 to 8 percent slopes
4	Chipley sand, 0 to 5 percent slopes
5	Chipley sand, 5 to 8 percent slopes
6	Escambia sandy loam, 2 to 5 percent slopes
8	Dorovan-Pamlico association, frequently flooded
9	Dothan loamy sand, 0 to 2 percent slopes
10	Dothan loamy sand, 2 to 5 percent slopes
11	Dothan loamy sand, 5 to 8 percent slopes
12	Foxworth sand, 0 to 5 percent slopes
13	Fuquay loamy sand, 0 to 5 percent slopes
14	Fuquay loamy sand, 5 to 8 percent slopes
15	Kinston-Johnston-Bibb complex, frequently flooded
16	Kureb sand, 0 to 8 percent slopes
17	Lakeland sand, 0 to 5 percent slopes
18	Lakeland sand, 5 to 12 percent slopes
19	Lakeland sand, 12 to 30 percent slopes
20	Leefield-Stilson loamy sands, 0 to 5 percent slopes
21	Leon sand
22	Lucy loamy sand, 0 to 5 percent slopes
23	Lucy loamy sand, 5 to 8 percent slopes
25	Orangeburg sandy loam, 1 to 5 percent slopes
26	Orangeburg sandy loam, 5 to 8 percent slopes
27	Rutlege fine sand
28	Tifton fine sandy loam, 0 to 2 percent slopes
29	Tifton fine sandy loam, 2 to 5 percent slopes
30	Tifton fine sandy loam, 5 to 8 percent slopes
31	Troup sand, 0 to 5 percent slopes
32	Troup sand, 5 to 8 percent slopes
33	Troup sand, 8 to 12 percent slopes
34	Troup sand, 12 to 25 percent slopes
35	Troup-Orangeburg-Cowarts loamy sands, 5 to 12 percent slopes
36	Pits
37	Angie sandy loam, 2 to 5 percent slopes
38	Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes
39	Pantego loam, depressional
40	Escambia sandy loam, 0 to 2 percent slopes
41	Maurepas muck, frequently flooded
42	Blanton sand, 0 to 5 percent slopes
43	Kinston-Bibb association, frequently flooded
44	Lakeland-Troup-Urban land complex, 0 to 5 percent slopes
45	Dirego muck, frequently flooded
46	Norfolk loamy sand, 2 to 5 percent slopes
47	Bonneau loamy sand, 0 to 5 percent slopes
48	Yemassee-Garcon-Bigbee complex, occasionally flooded
49	Eglin sand, 0 to 5 percent slopes
50	Mandarin sand
51	Bigbee loamy sand, 0 to 5 percent slopes, occasionally flooded
52	Yemassee fine sandy loam, occasionally flooded
53	Arents, 2 to 8 percent slopes
54	Newhan-Corolla sands, rolling
55	Beaches
56	Kureb sand, hilly
57	Hurricane sand, 0 to 5 percent slopes
58	Duckston muck, frequently flooded
59	Malbis fine sandy loam, 0 to 2 percent slopes
60	Malbis fine sandy loam, 2 to 5 percent slopes
61	Malbis fine sandy loam, 5 to 8 percent slopes
62	Resota sand, 0 to 5 percent slopes
63	Pickney sand, depressional
64	Pamlico muck
65	Garcon loamy fine sand, occasionally flooded
66	Kenansville loamy fine sand, 0 to 5 percent slopes
68	Florala loamy fine sand, 0 to 2 percent slopes
69	Florala loamy fine sand, 2 to 5 percent slopes
70	Shubuta fine sandy loam, 2 to 5 percent slopes
71	Shubuta fine sandy loam, 5 to 12 percent slopes
72	Osier fine sand
73	Albany loamy sand

ALPHABETICAL LISTING

NAME	SYMBOL
73	Albany loamy sand
1	Albany-Pactolus loamy sands, 0 to 5 percent slopes
37	Angie sandy loam, 2 to 5 percent slopes
53	Arents, 2 to 8 percent slopes
55	Beaches
51	Bigbee loamy sand, 0 to 5 percent slopes, occasionally flooded
42	Blanton sand, 0 to 5 percent slopes
2	Bonifay loamy sand, 0 to 5 percent slopes
3	Bonifay loamy sand, 5 to 8 percent slopes
47	Bonneau loamy sand, 0 to 5 percent slopes
38	Bonneau-Norfolk-Angie complex, 5 to 12 percent slopes
4	Chipley sand, 0 to 5 percent slopes
5	Chipley sand, 5 to 8 percent slopes
45	Dirego muck, frequently flooded
8	Dorovan-Pamlico association, frequently flooded
9	Dothan loamy sand, 0 to 2 percent slopes
10	Dothan loamy sand, 2 to 5 percent slopes
11	Dothan loamy sand, 5 to 8 percent slopes
58	Duckston muck, frequently flooded
49	Eglin sand, 0 to 5 percent slopes
40	Escambia sandy loam, 0 to 2 percent slopes
6	Escambia sandy loam, 2 to 5 percent slopes
68	Florala loamy fine sand, 0 to 2 percent slopes
69	Florala loamy fine sand, 2 to 5 percent slopes
12	Foxworth sand, 0 to 5 percent slopes
13	Fuquay loamy sand, 0 to 5 percent slopes
14	Fuquay loamy sand, 5 to 8 percent slopes
65	Garcon loamy fine sand, occasionally flooded
57	Hurricane sand, 0 to 5 percent slopes
66	Kenansville loamy fine sand, 0 to 5 percent slopes
43	Kinston-Bibb association, frequently flooded
15	Kinston-Johnston-Bibb complex, frequently flooded
16	Kureb sand, 0 to 8 percent slopes
56	Kureb sand, hilly
17	Lakeland sand, 0 to 5 percent slopes
18	Lakeland sand, 5 to 12 percent slopes
19	Lakeland sand, 12 to 30 percent slopes
44	Lakeland-Troup-Urban land complex, 0 to 5 percent slopes
20	Leefield-Stilson loamy sands, 0 to 5 percent slopes
21	Leon sand
22	Lucy loamy saand, 0 to 5 percent slopes
23	Lucy loamy sand, 5 to 8 percent slopes
59	Malbis fine sandy loam, 0 to 2 percent slopes
60	Malbis fine sandy loam, 2 to 5 percent slopes
61	Malbis fine sandy loam, 5 to 8 percent slopes
50	Mandarin sand
41	Maurepas muck, frequently flooded
54	Newhan-Corolla sands, rolling
46	Norfolk loamy sand, 2 to 5 percent slopes
25	Orangeburg sandy loam, 1 to 5 percent slopes
26	Orangeburg sandy loam, 5 to 8 percent slopes
72	Osier fine sand
64	Pamlico muck
39	Pantego loam, depressional
63	Pickney sand, depressional
36	Pits
62	Resota sand, 0 to 5 percent slopes
27	Rutlege fine sand
70	Shubuta fine sandy loam, 2 to 5 percent slopes
71	Shubuta fine sandy loam, 5 to 12 percent slopes
28	Tifton fine sandy loam, 0 to 2 percent slopes
29	Tifton fine sandy loam, 2 to 5 percent slopes
30	Tifton fine sandy loam, 5 to 8 percent slopes
31	Troup sand, 0 to 5 percent slopes
32	Troup sand, 5 to 8 percent slopes
33	Troup sand, 8 to 12 percent slopes
34	Troup sand, 12 to 25 percent slopes
35	Troup-Orangeburg-Cowarts loamy sands, 5 to 12 percent slopes
52	Yemassee fine sandy loam, occasionally flooded
48	Yemassee-Garcon-Bigbee complex, occasionally flooded

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES	
National, state or province	—— – –
County or parish	—— –
Minor civil division	– – –
Reservation (national forest or park, state forest or park, and large airport)	—— · ——
Land grant	—— · · ——
Limit of soil survey (label)	——
Field sheet matchline & neatline	——
AD HOC BOUNDARY (label)	Dislas swamp
Small airport, airfield, park, oilfield, cemetery, or flood pool	FLOOD POOL LINE
STATE COORDINATE TICK	⊥
LAND DIVISION CORNERS (sections and land grants)	+ + +
ROADS	
Divided (median shown if scale permits)	═
Other roads	——
Trail	- - - -
ROAD EMBLEM & DESIGNATIONS	
Interstate	27
Federal	173
State	28
County, farm or ranch	1283
RAILROAD	–+–+–+–
POWER TRANSMISSION LINE (normally not shown)	·····•·····
PIPE LINE (normally not shown)	–•–•–•–
FENCE (normally not shown)	–■––■–
LEVEES	
Without road	ꞁꞁꞁꞁꞁꞁꞁꞁꞁ
With road	╪╪╪╪
With railroad	╪+╪+╪
DAMS	
Large (to scale)	⟷
Medium or small	water
PITS	w
Gravel pit	⁂
Mine or quarry	⛏

MISCELLANEOUS CULTURAL FEATURES

Farmstead, house (omit in urban areas)	•
Church	♁
School	⚑
Indian mound (label)	⌒ Indian Mound
Located object (label)	Tower
Tank (label)	• Gas
Wells, oil or gas	⁑
Windmill	✱
Kitchen midden	

WATER FEATURES

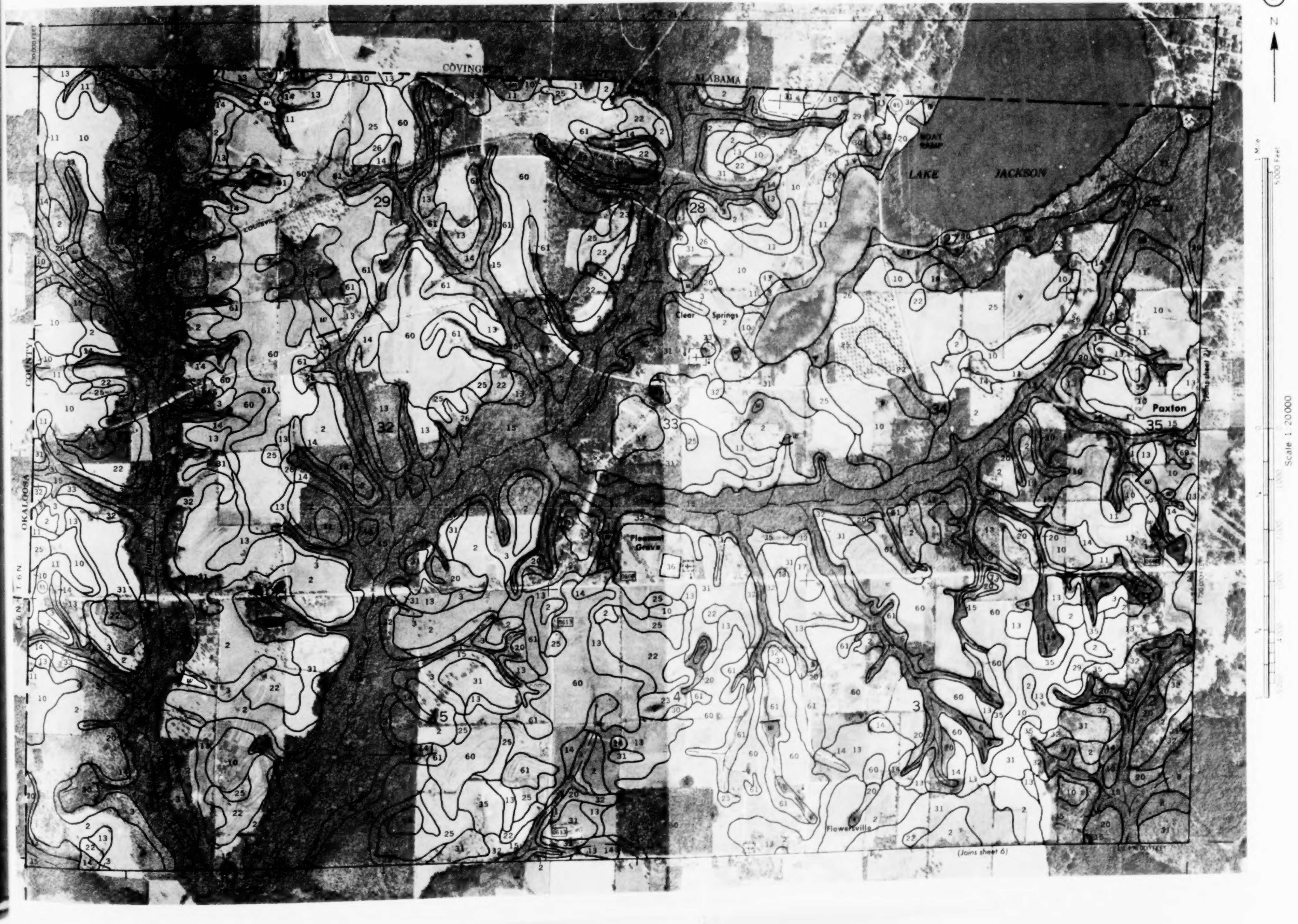
DRAINAGE	
Perennial, double line	≈
Perennial, single line	∼
Intermittent	∼ ∼
Drainage end	∼ ➤
Canals or ditches	
Double-line (label)	CANAL
Drainage and/or irrigation	➤ · ➤
LAKES, PONDS AND RESERVOIRS	
Perennial	water w
Intermittent	int i
MISCELLANEOUS WATER FEATURES	
Marsh or swamp	⩡
Spring	⊸
Well, artesian	◆
Well, irrigation	◇
Wet spot	♦

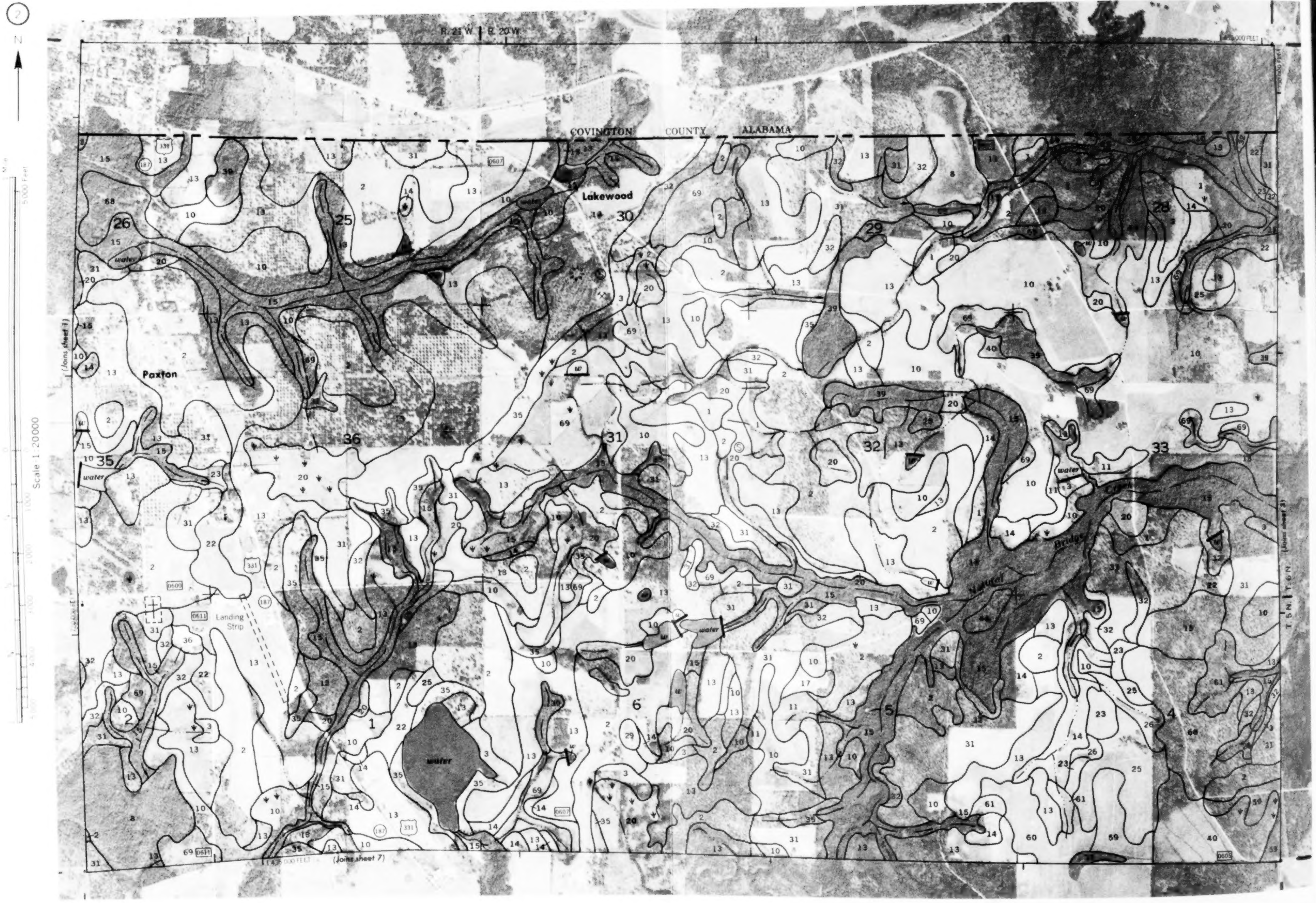
SPECIAL SYMBOLS FOR SOIL SURVEY

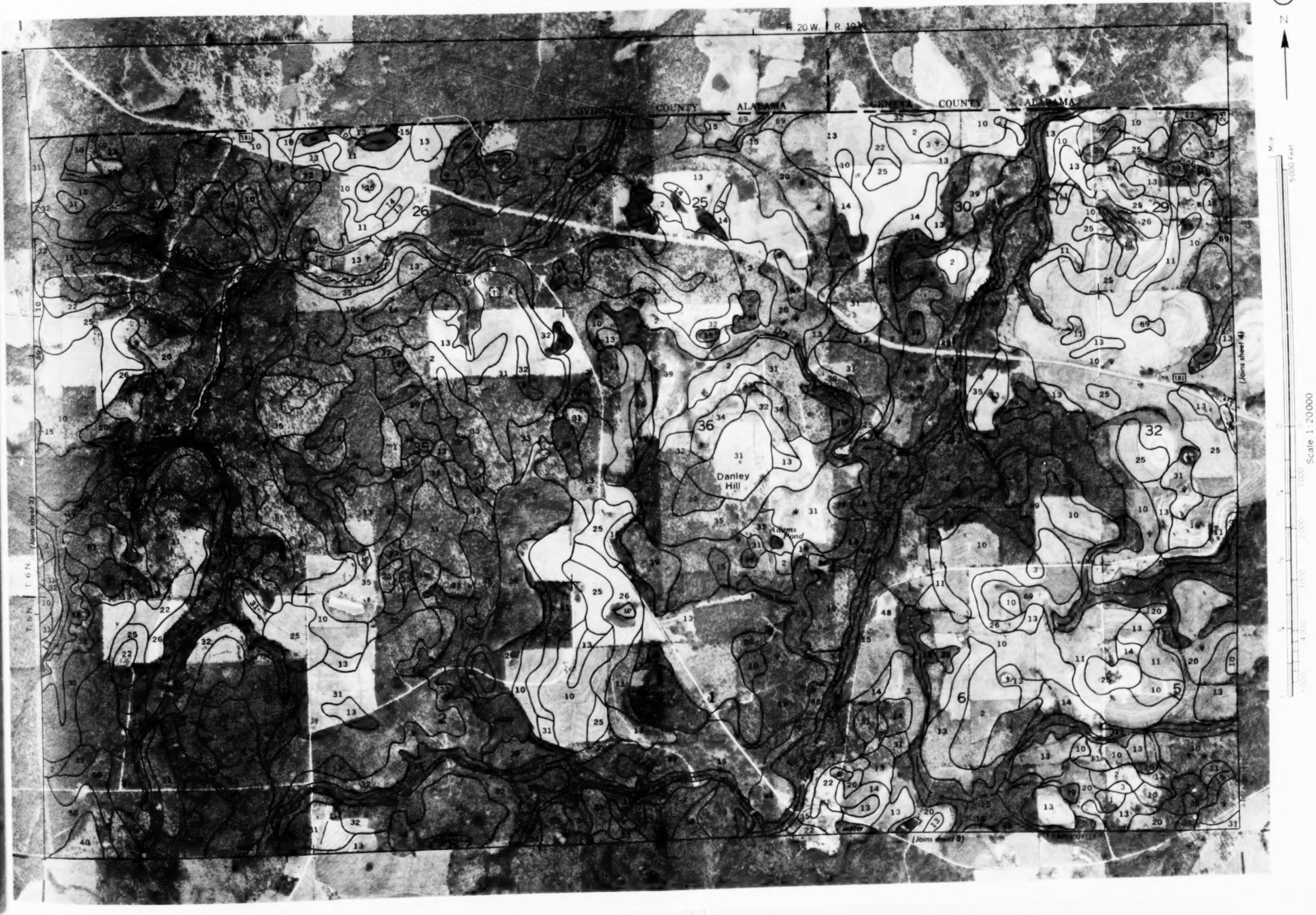
SOIL DELINEATIONS AND SYMBOLS	12 47
ESCARPMENTS	
Bedrock (points down slope)	▾▾▾▾▾▾▾▾▾
Other than bedrock (points down slope)	▿▿▿▿▿▿▿▿▿
SHORT STEEP SLOPE	···········
GULLY	∼∼∼∼∼∼∼∼
DEPRESSION OR SINK	◊
SOIL SAMPLE SITE	Ⓢ
MISCELLANEOUS	
Blowout	◡
Clay spot	✱
Gravelly spot	⁂
Gumbo, slick or scabby spot (sodic)	⌀
Dumps and other similar non soil areas	☰
Prominent hill or peak	⁘
Rock outcrop (includes sandstone and shale)	▾
Saline spot	+
Sandy spot	⁙
Severely eroded spot	≑
Slide or slip (tips point upslope)	)))
Stony spot, very stony spot	0 ∞

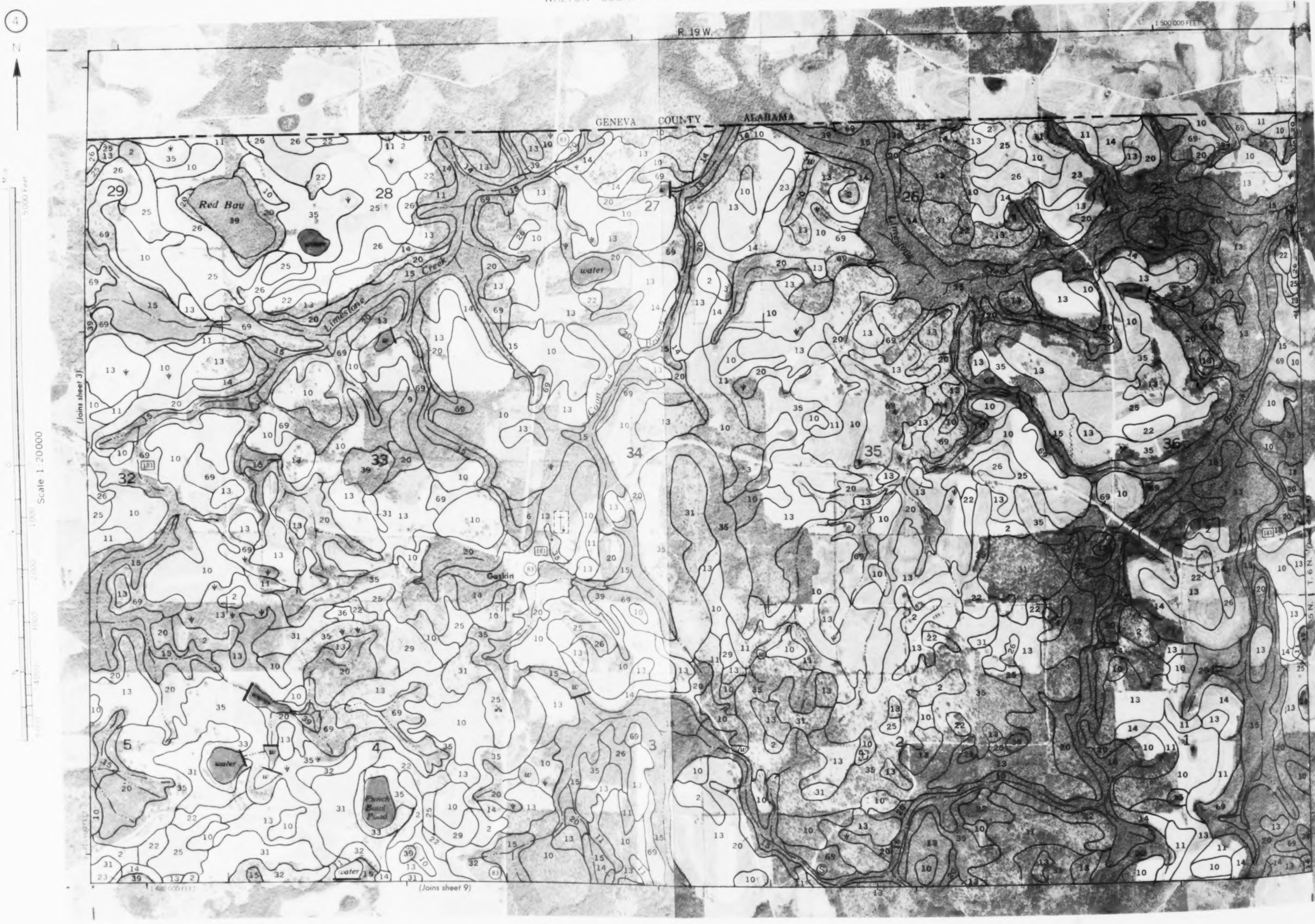
WALTON COUNTY, FLORIDA — SHEET NUMBER 1

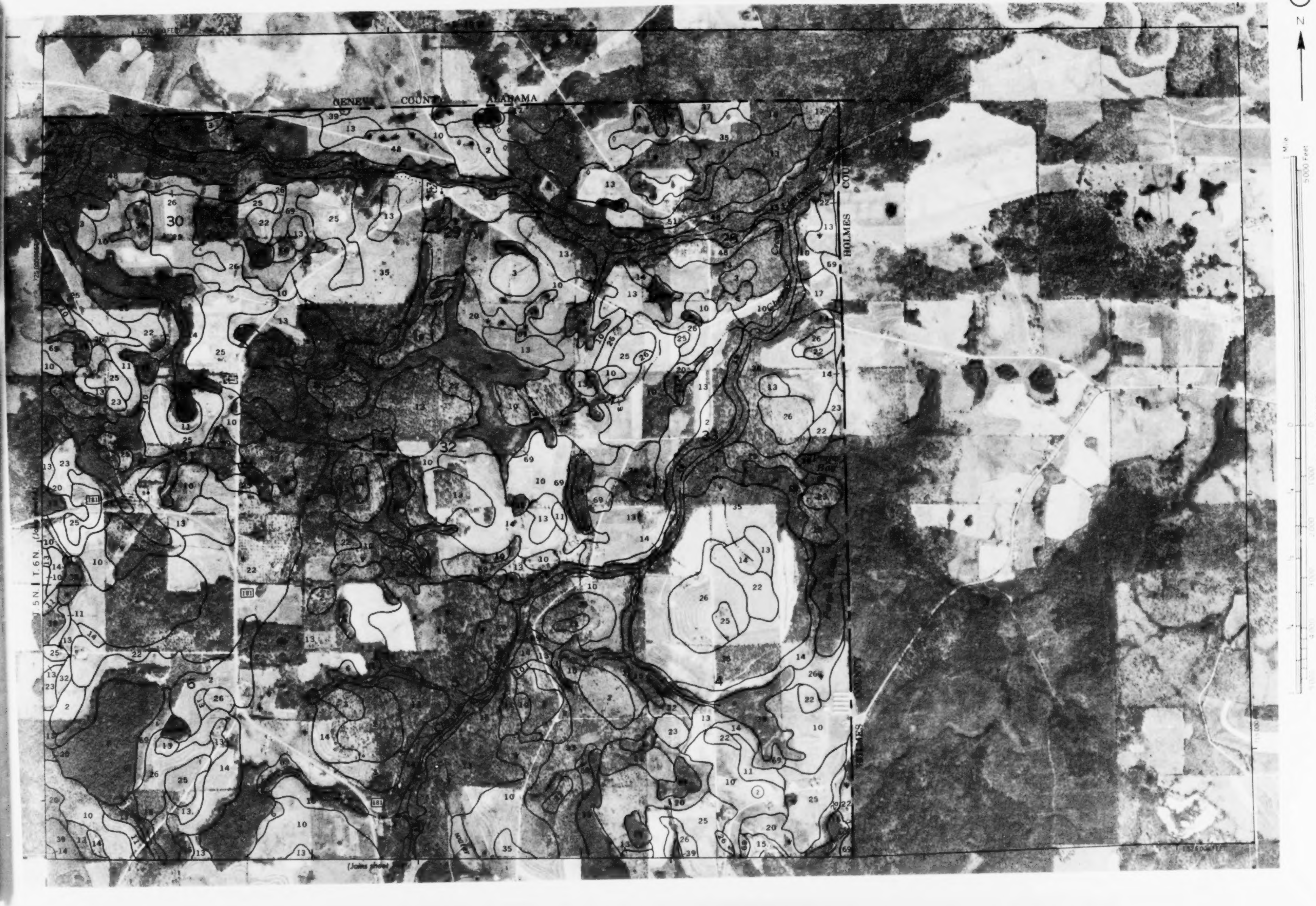
①


N
COVINGTON
ALABAMA
LAKE JACKSON
BOAT RAMP
Clear Springs
Paxton
Pleasant Grove
Flowersville
OKALOOSA COUNTY
T 6 N
(Joins sheet 2)
(Joins sheet 6)
1 Mile
5,000 Feet
Scale 1:20000

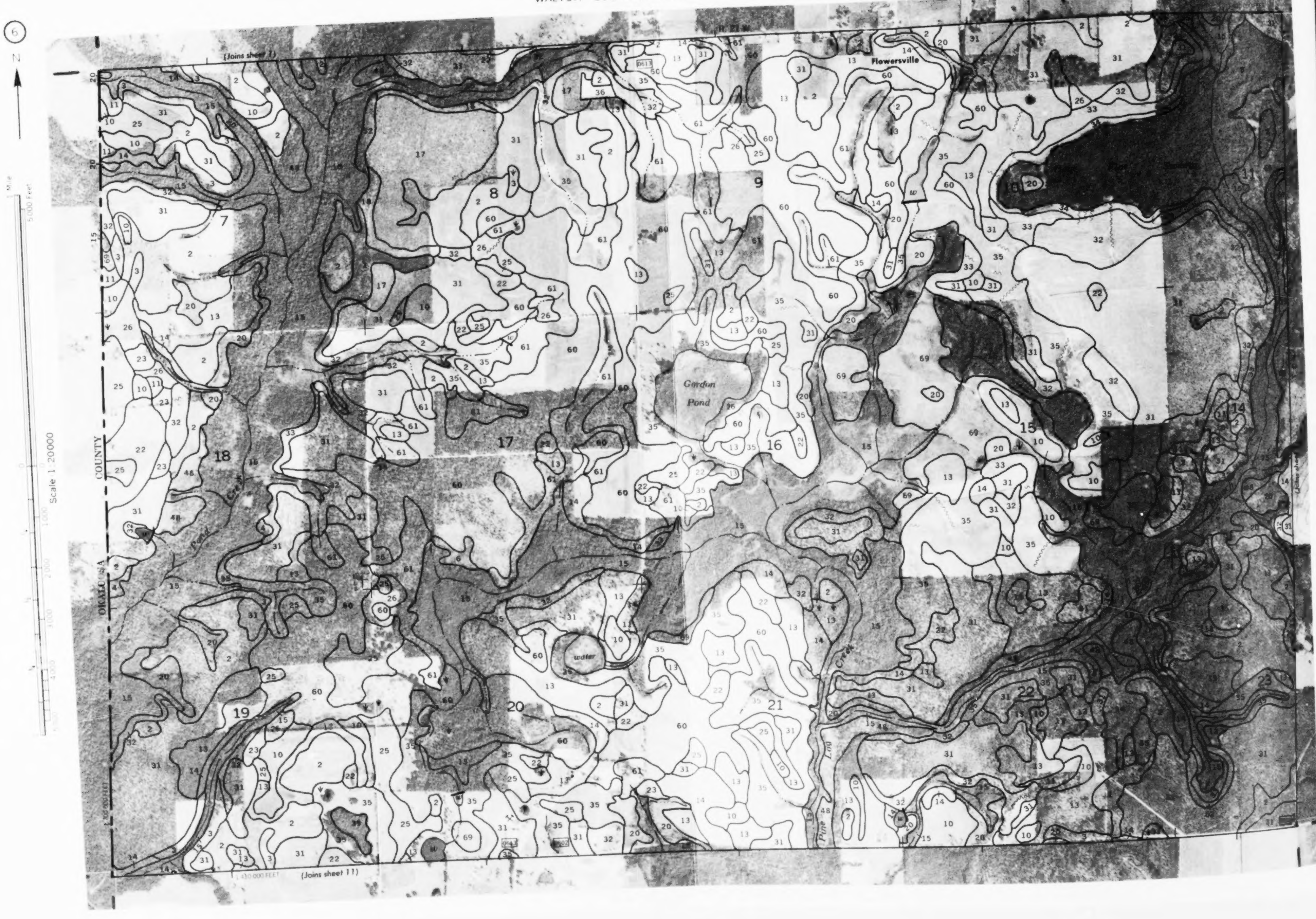

②
N
1 Mile
5000 Feet
Scale 1:20000
R. 21 W.
R. 20 W.
5000 FEET
COVINGTON COUNTY ALABAMA
Lakewood
Paxton
Landing Strip
Natural Bridge Creek
water
(Joins sheet 1)
(Joins sheet 3)
(Joins sheet 7)
T. 5 N.
T. 6 N.
331
187
0600
0607
0611
0609

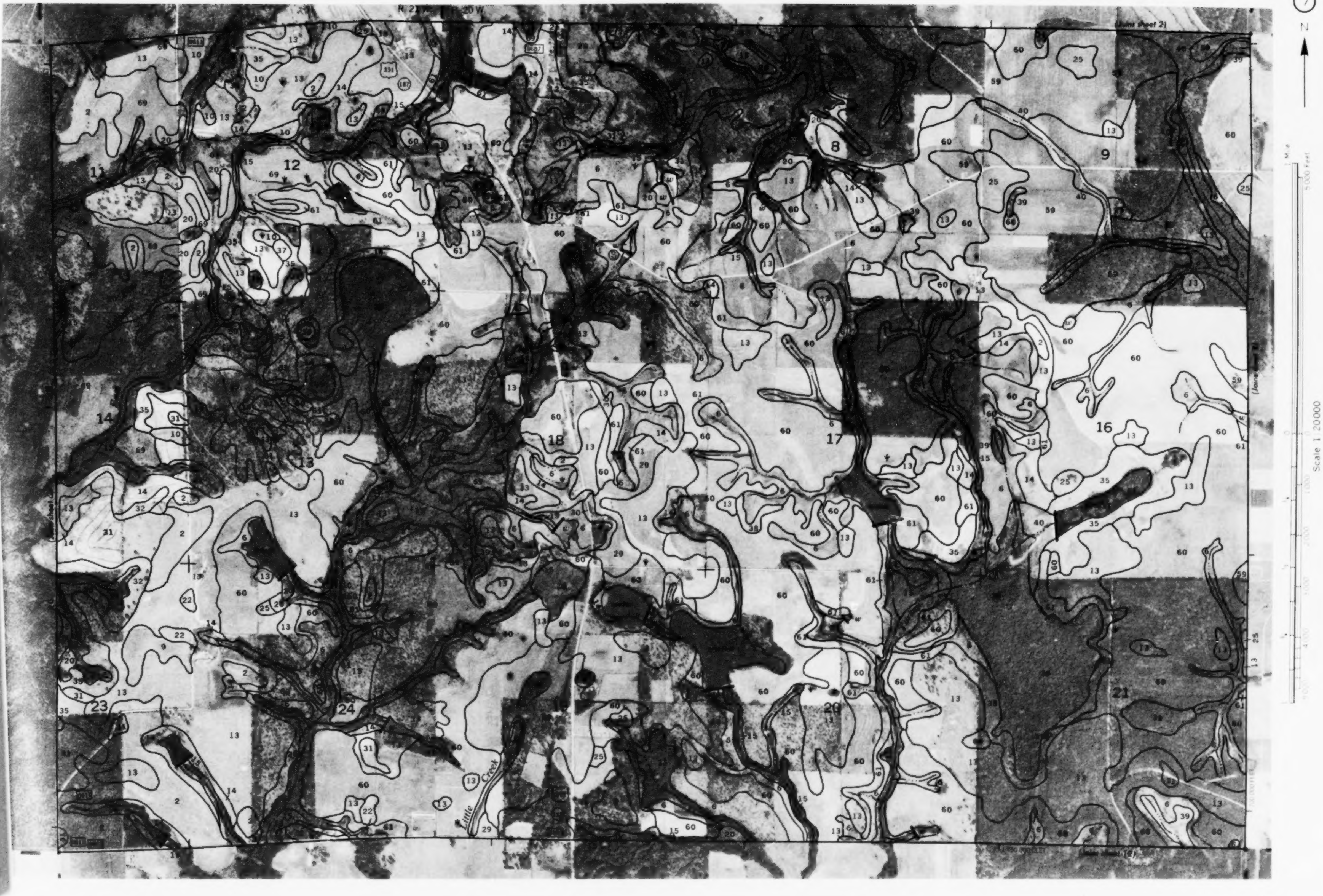

R. 20 W.
R. 19 W.
COVINGTON COUNTY ALABAMA
GENEVA COUNTY ALABAMA
181
Danley Hill
Adams Pond
(Joins sheet 2)
(Joins sheet 4)
(Joins sheet 8)
T. 6 N.
T. 5 N.
N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000
25
26
29
30
32
36
6
5


N
Scale 1:20000
5000 Feet
R. 19 W.
1 500 000 FEET
GENEVA COUNTY ALABAMA
Red Bay
Limestone Creek
water
Gaskin
Punch Bowl Pond
Branch
(Joins sheet 3)
(Joins sheet 9)
1 400 000 FEET
T. 6 N.
29
28
27
26
25
32
33
34
35
36
5
4
3
2
1

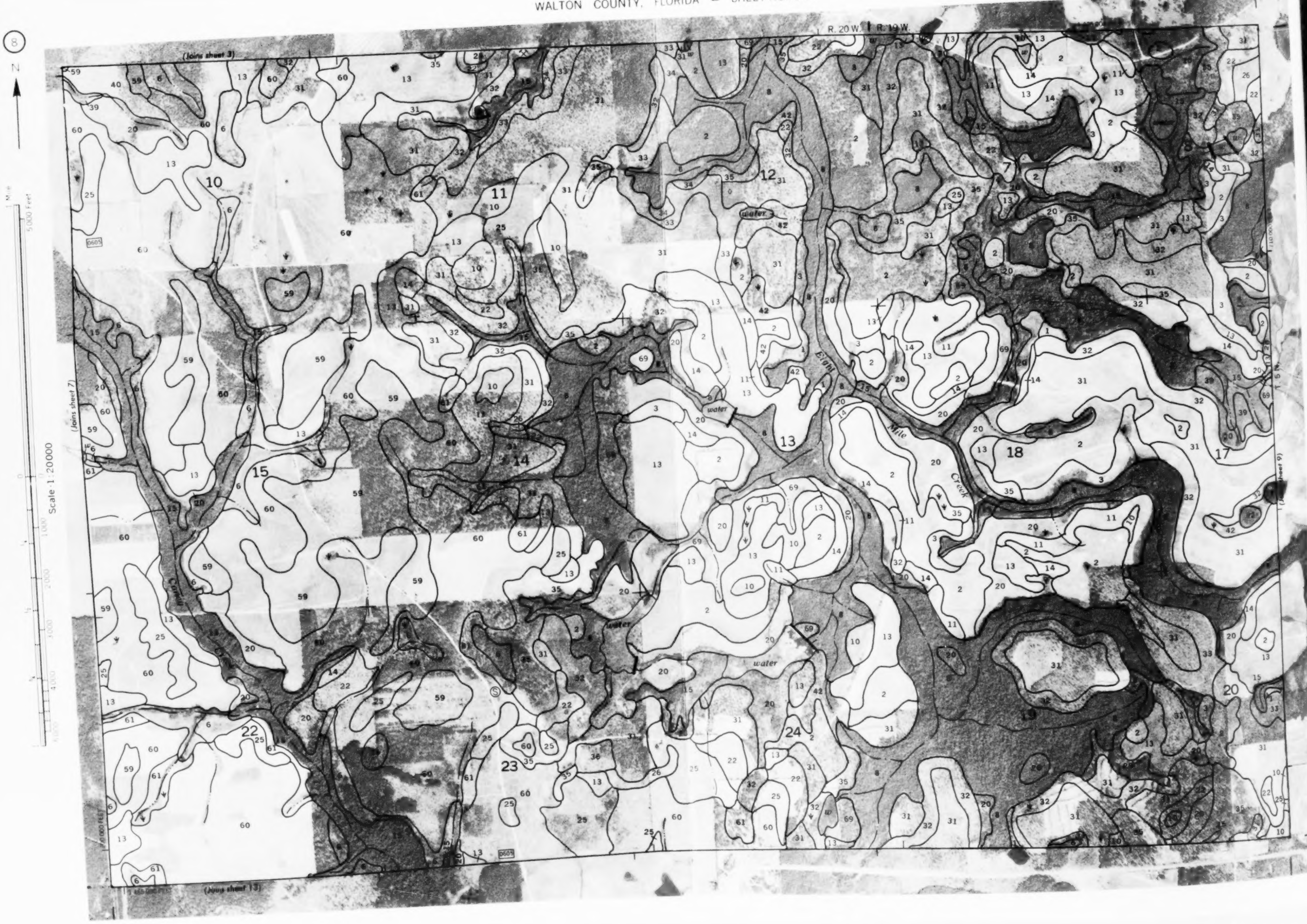

⑤
N
1 Mile
5000 Feet
Scale 1:20000
GENEVA COUNTY ALABAMA
HOLMES COUNTY
T.6 N.
T.5 N.
181
(Joins sheet

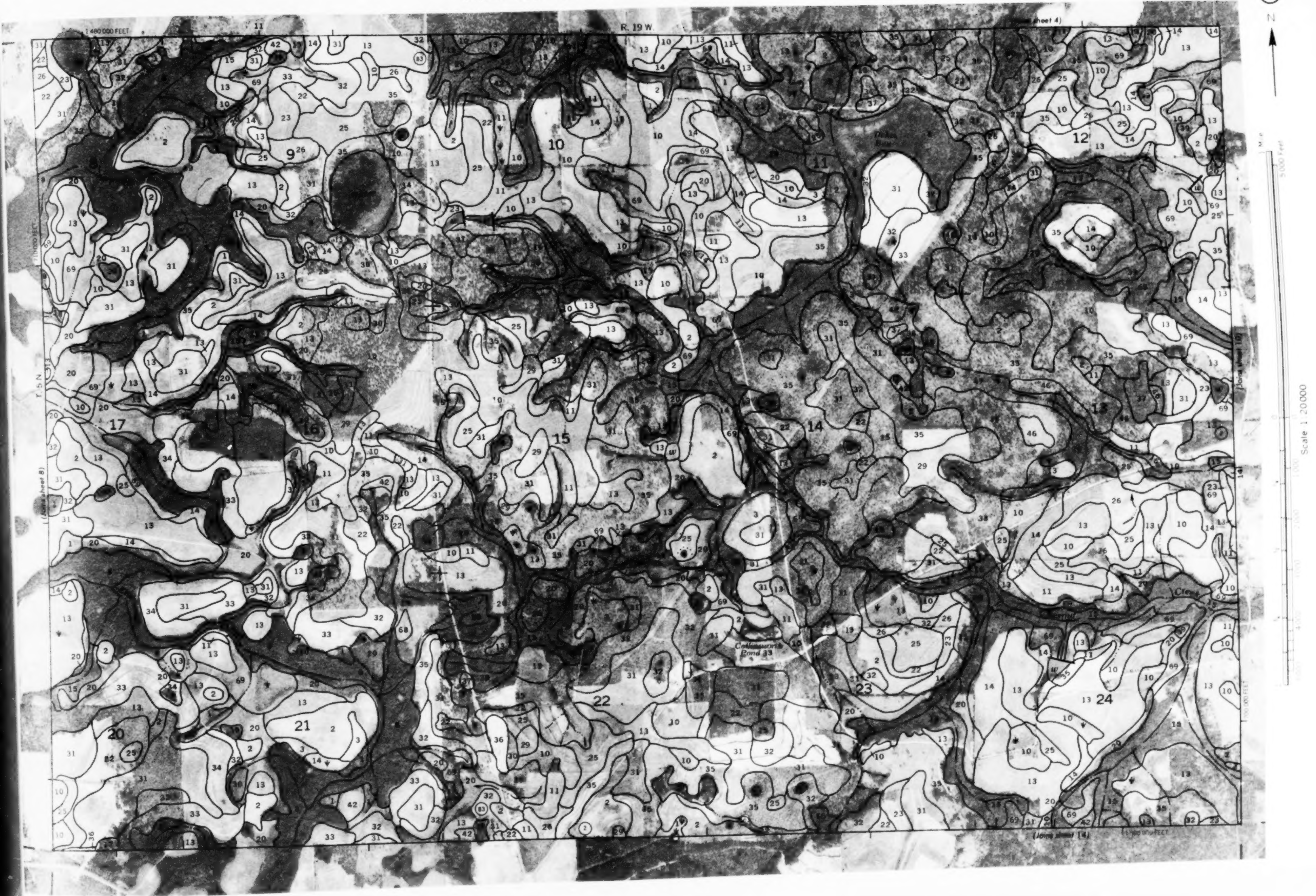
WALTON COUNTY, FLORIDA — SHEET NUMBER 6

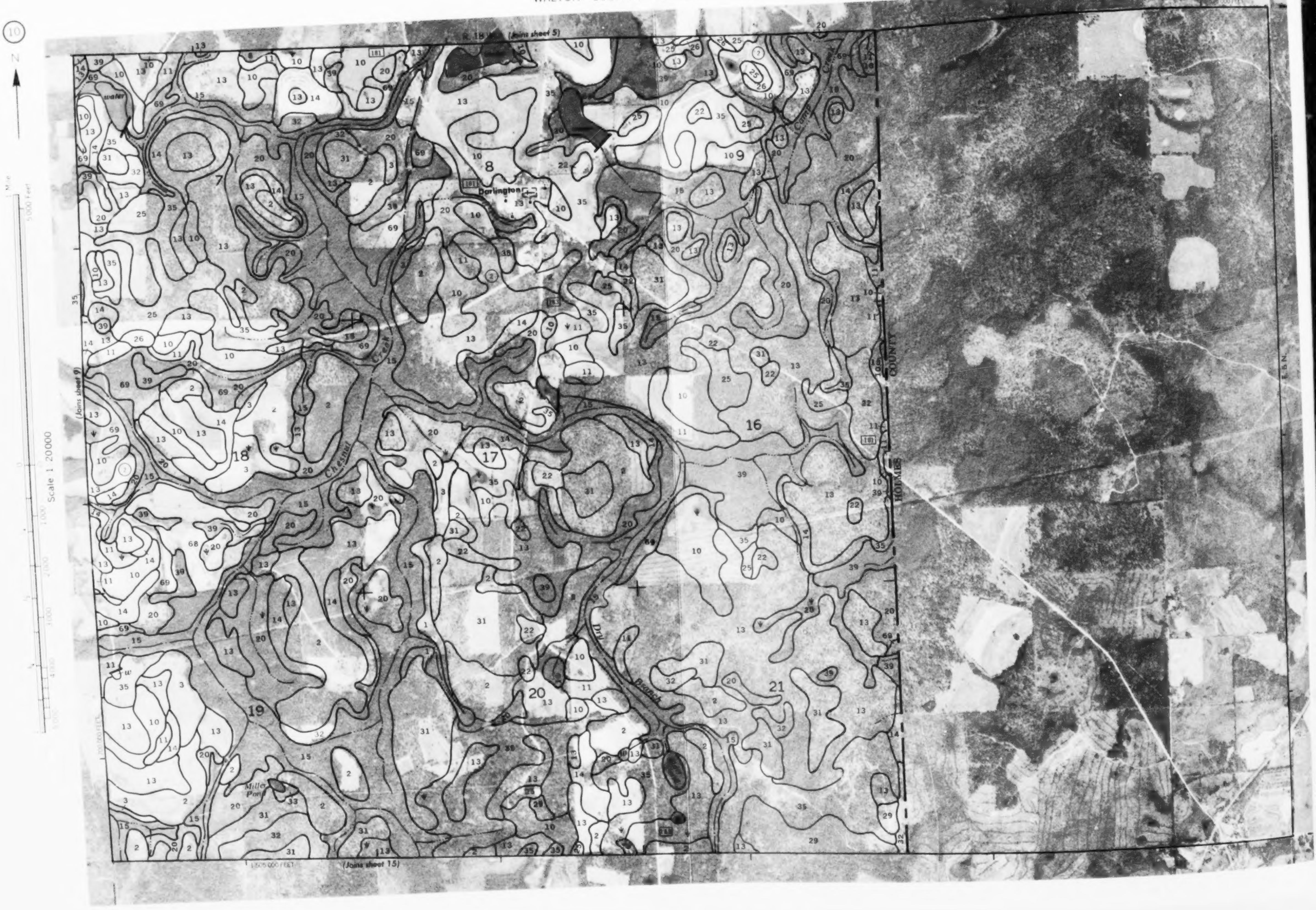

⑥
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 1)
(Joins sheet 11)
Flowersville
Gordon Pond
water
OKALOOSA COUNTY
Pond Creek
Pine Log Creek
7
8
9
15
16
17
18
19
20
21
22
23


N
R 21 W
R 20 W
(Joins sheet 2)
(Joins sheet 12)
Little Creek
1 Mile
5000 Feet
Scale 1:20 000

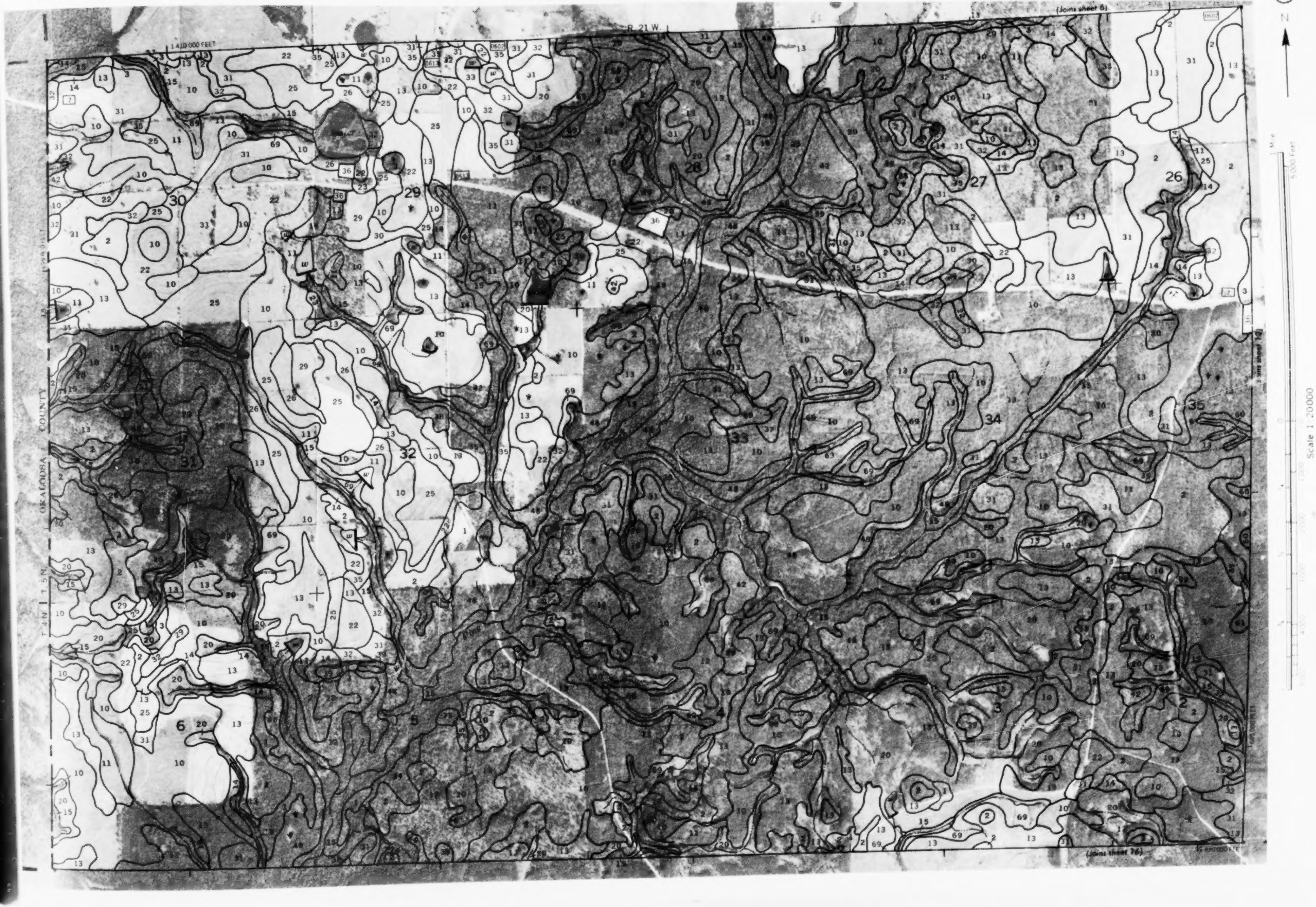
WALTON COUNTY, FLORIDA — SHEET NUMBER 8


8
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 3)
(Joins sheet 7)
(Joins sheet 9)
(Joins sheet 13)
R. 20 W.
R. 19 W.
Eight Mile Creek
water
10
11
12
13
14
15
17
18
20
22
23
24

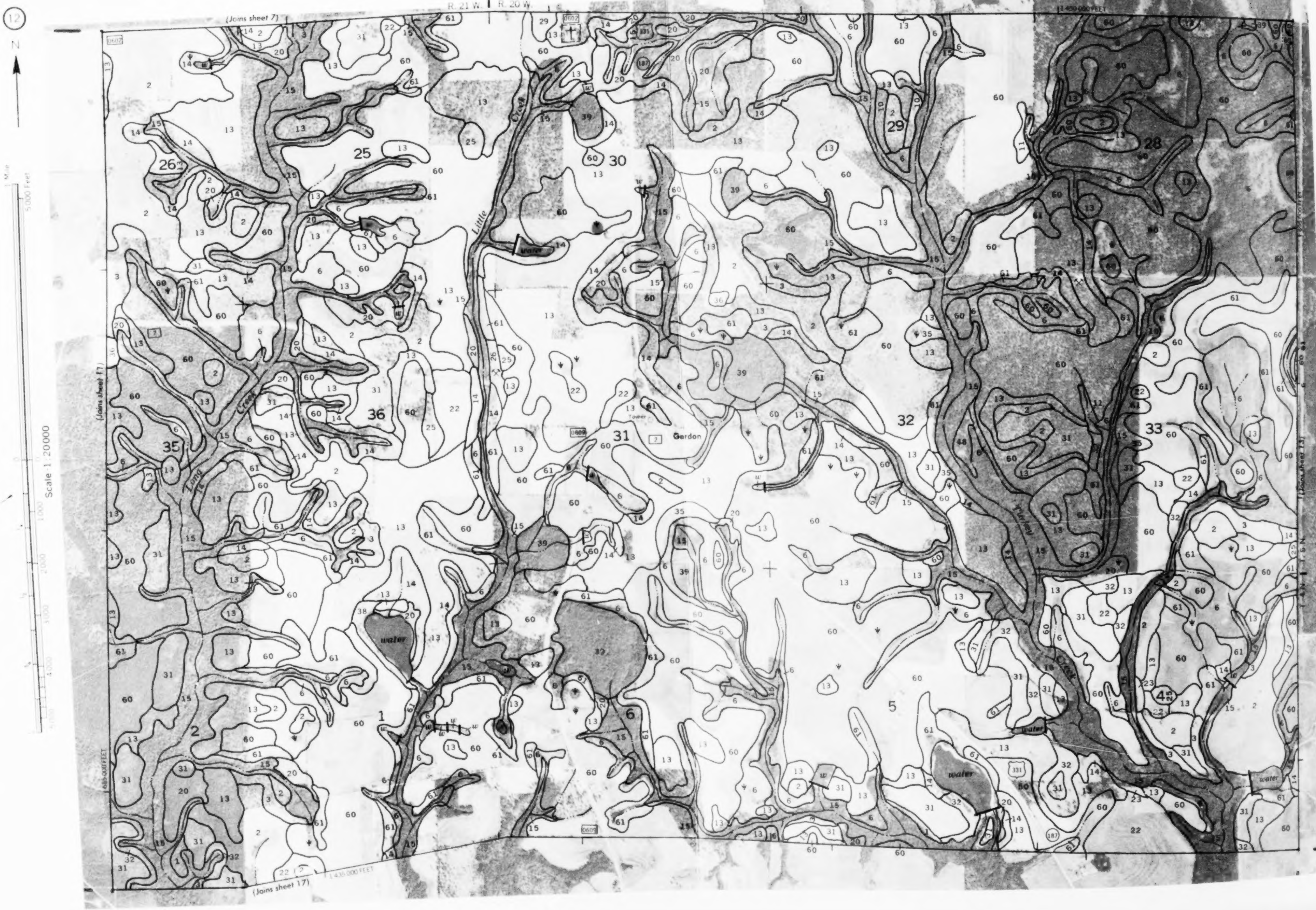

N
1 480 000 FEET
R. 19 W.
(Joins sheet 4)
T. 5 N.
(Joins sheet 8)
(Joins sheet 10)
(Joins sheet 14)
Collinsworth Pond
Scale 1:20000
1 Mile
5000 Feet
9
10
11
12
14
15
16
17
20
21
22
23
24

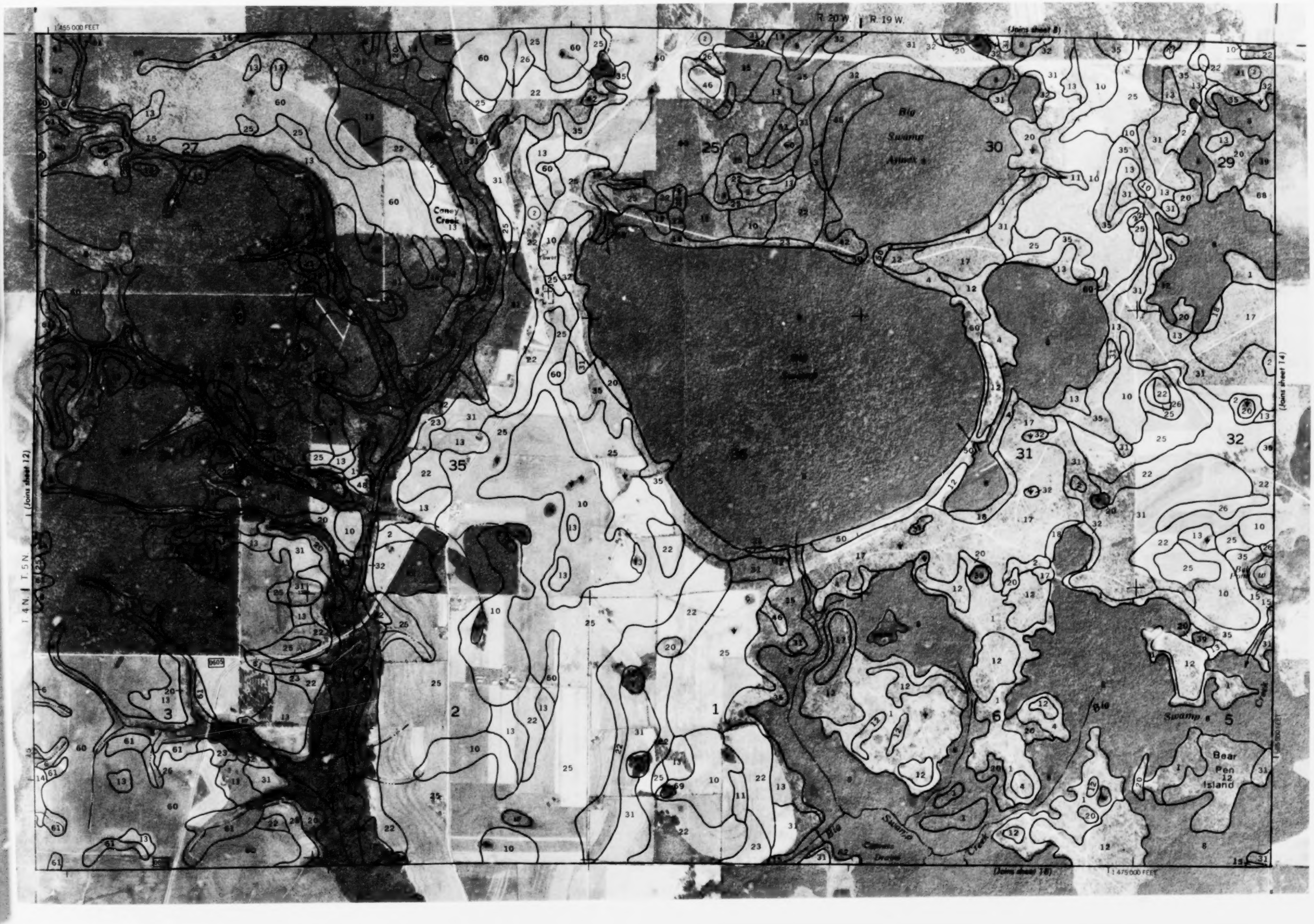

10
N
1 Mile
5000 Feet
Scale 1:20000
R. 18 W. (Joins sheet 5)
(Joins sheet 9)
(Joins sheet 15)
Darlington
Chestnut Creek
Camp Creek
Dry Branch
Miller Pond
water
HOLMES COUNTY
181
183
7
8
9
16
17
18
19
20
21
T. 5 N.
35
1 505 000 FEET

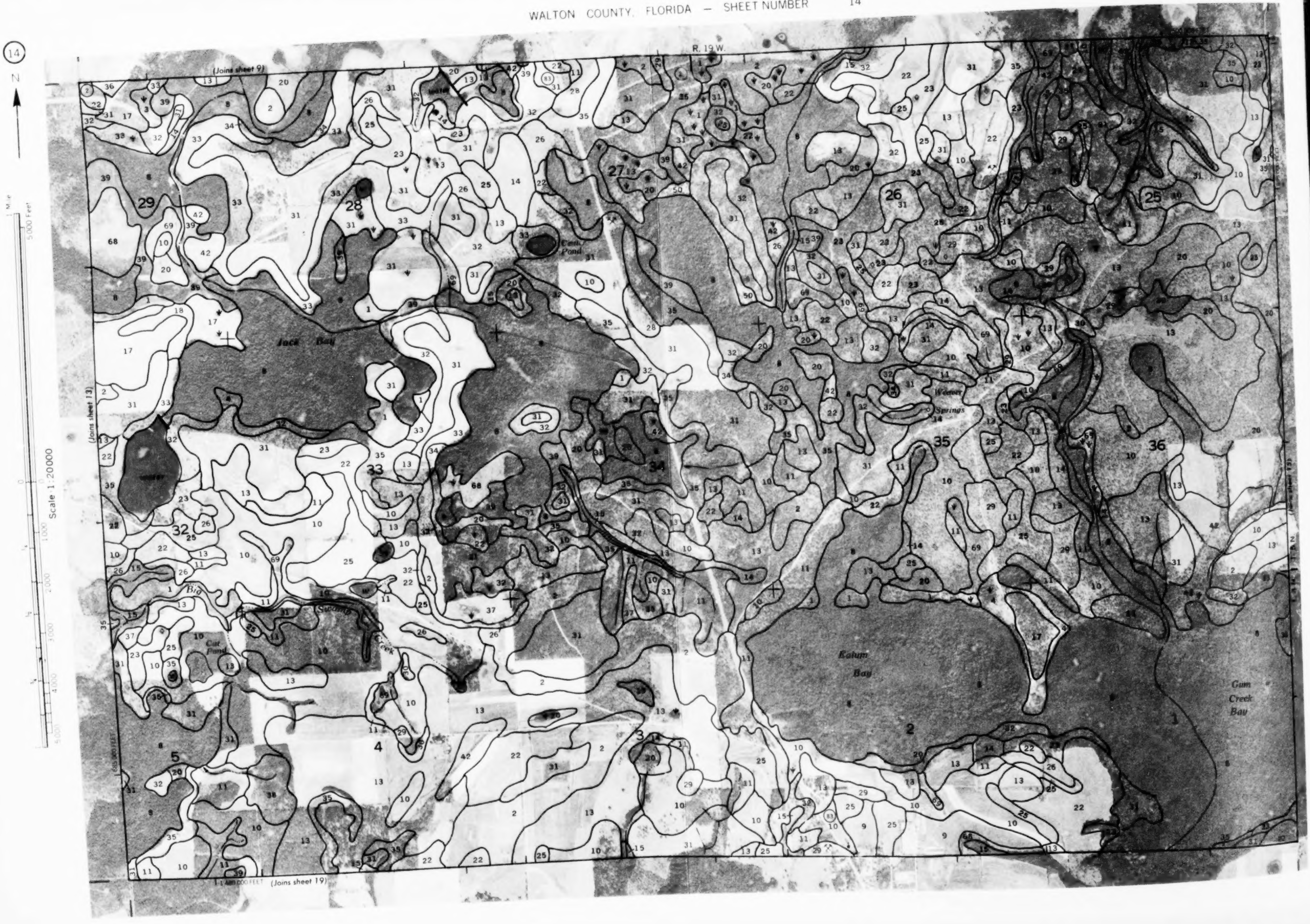
WALTON COUNTY, FLORIDA — SHEET NUMBER 11

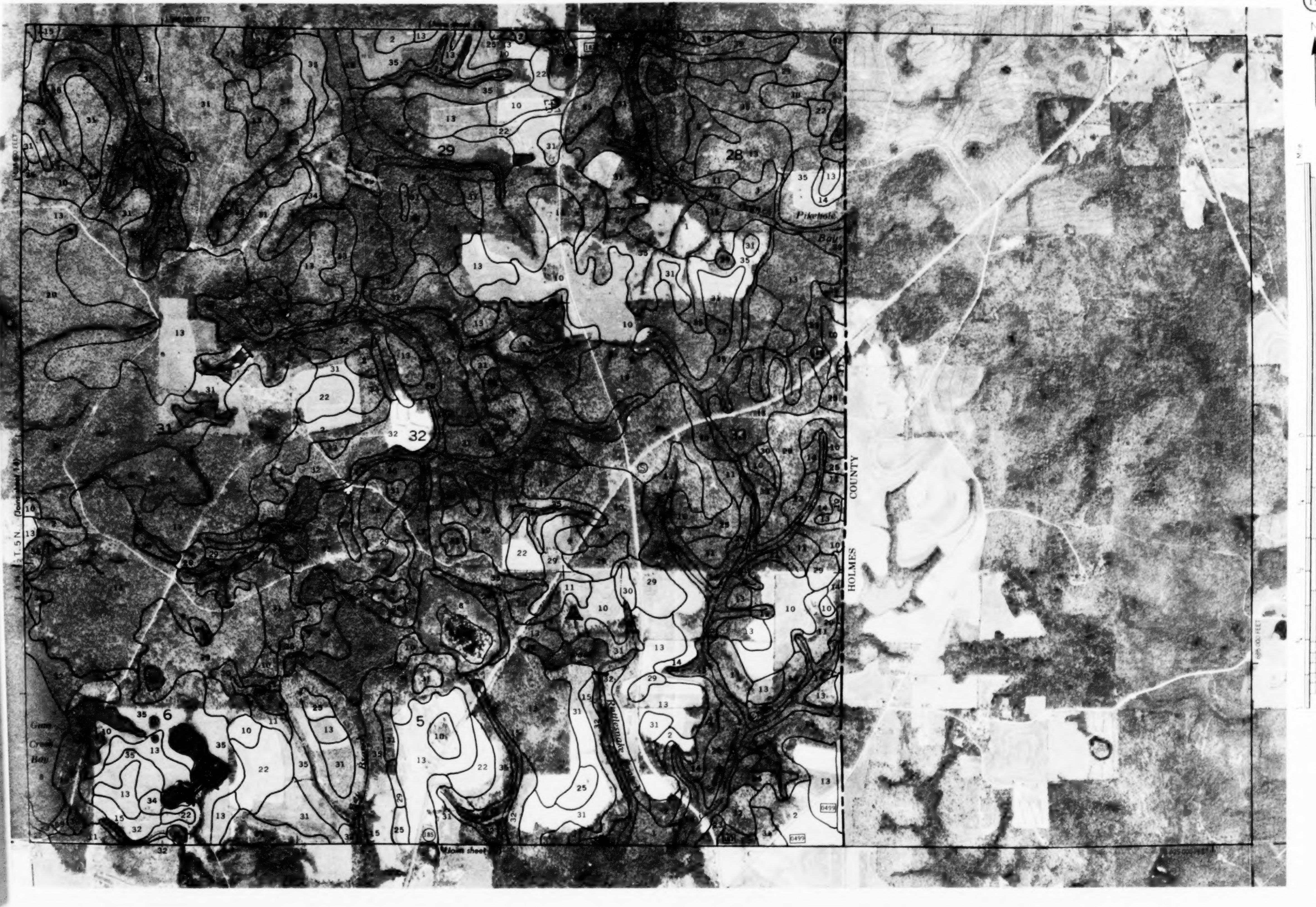


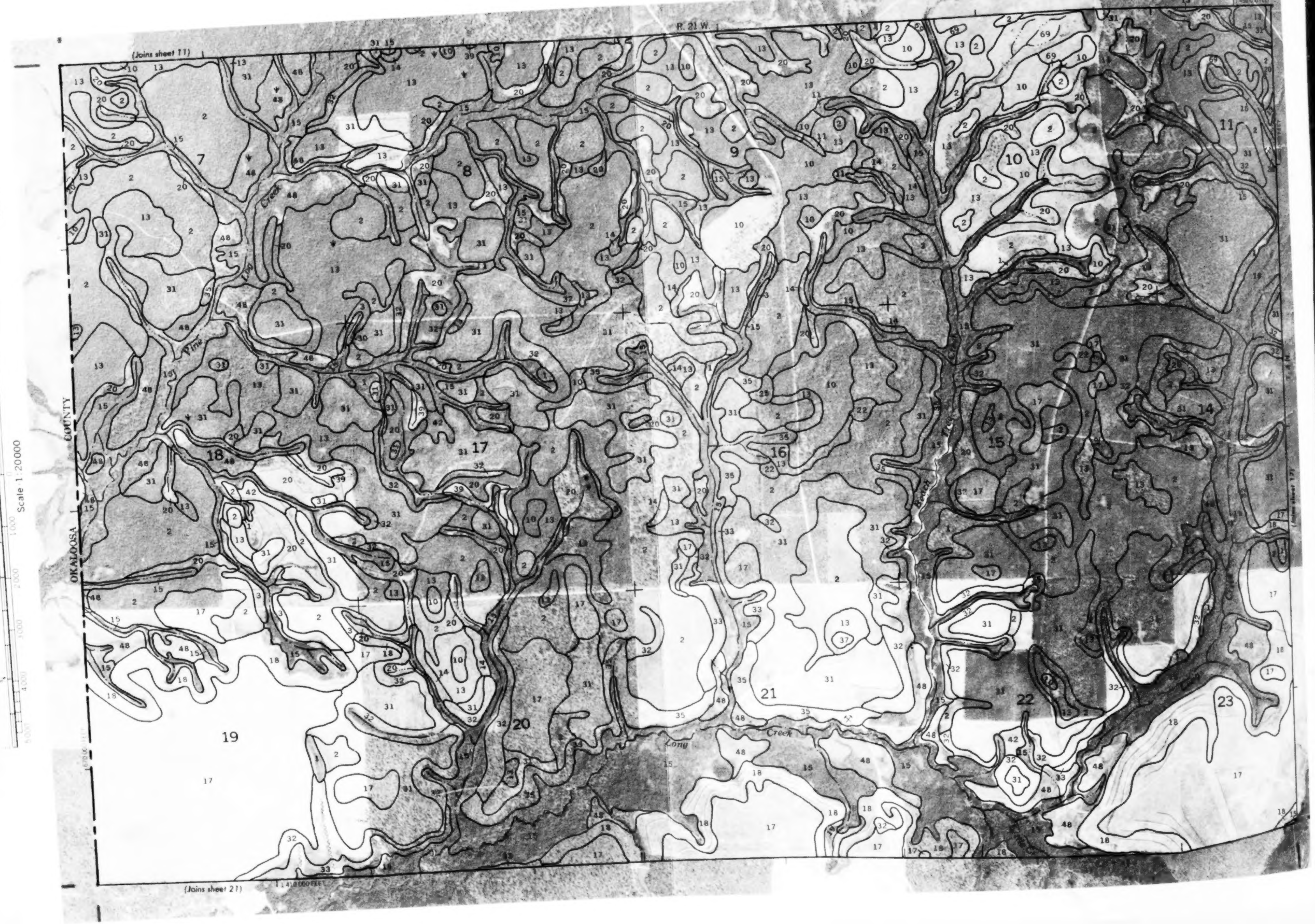
11
N
(Joins sheet 6)
R. 21 W.
1 410 000 FEET
OKALOOSA COUNTY
T. 5 N.
T. 4 N.
(Joins sheet 12)
(Joins sheet 16)
30
29
28
27
26
31
32
33
34
35
6
5
4
3
2
1 Mile
5000 Feet
Scale 1:20 000

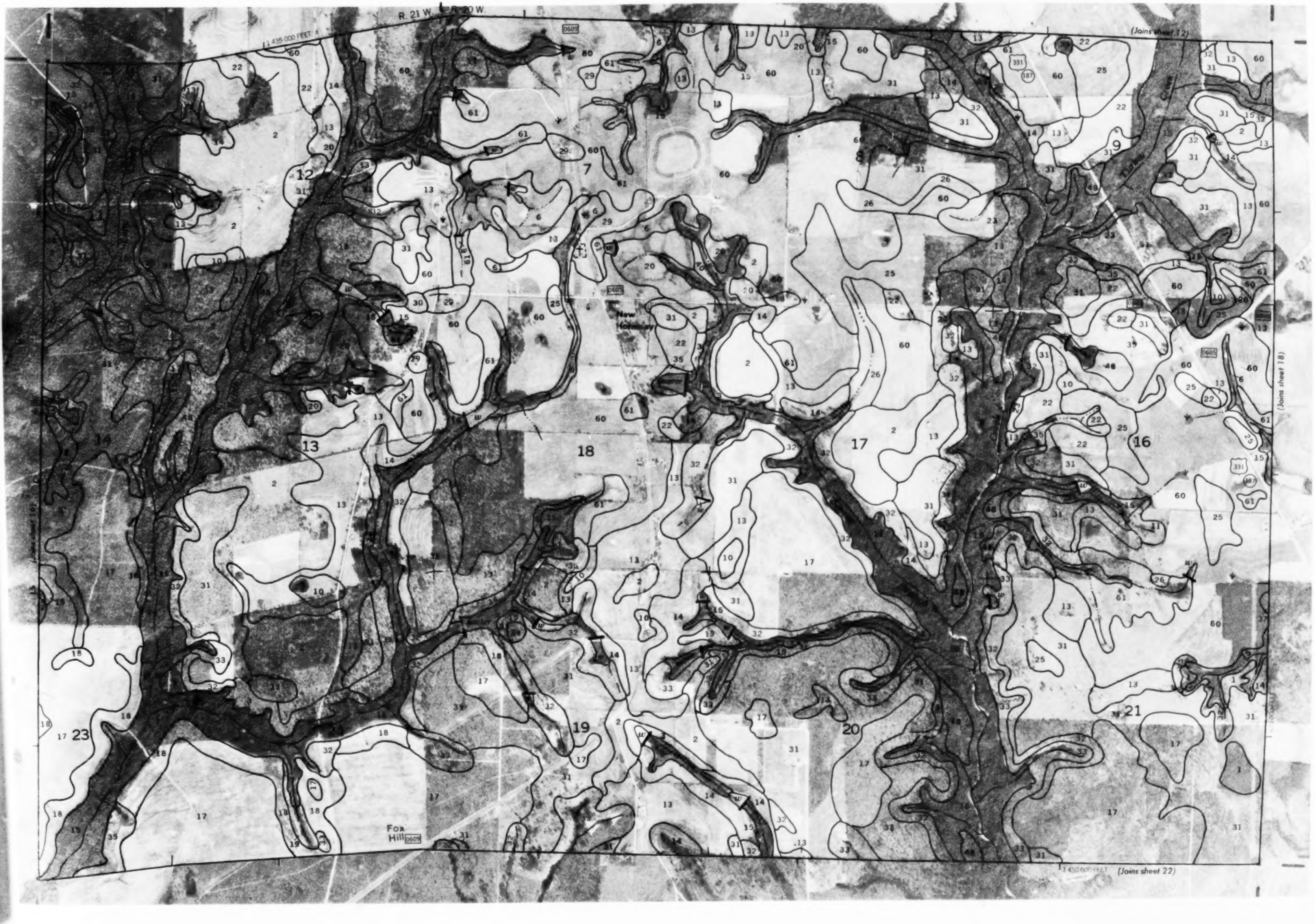

12
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
R. 21 W.
R. 20 W.
(Joins sheet 7)
(Joins sheet 11)
(Joins sheet 13)
(Joins sheet 17)
1 450 000 FEET
1 435 000 FEET
685 000 FEET
Little Creek
Long Creek
Turkey Creek
Gordon
Tower
water
0602
0609
187
331
T. 1 N.


1 455 000 FEET
R. 20 W.
R. 19 W.
(Joins sheet 8)
(Joins sheet 12)
(Joins sheet 14)
(Joins sheet 18)
T. 4 N.
T. 5 N.
1 475 000 FEET
27
25
30
29
35
31
32
3
2
1
6
5
Caney Creek
Big Swamp Annex
Big Swamp
Big Swamp Creek
Bear Pen Island

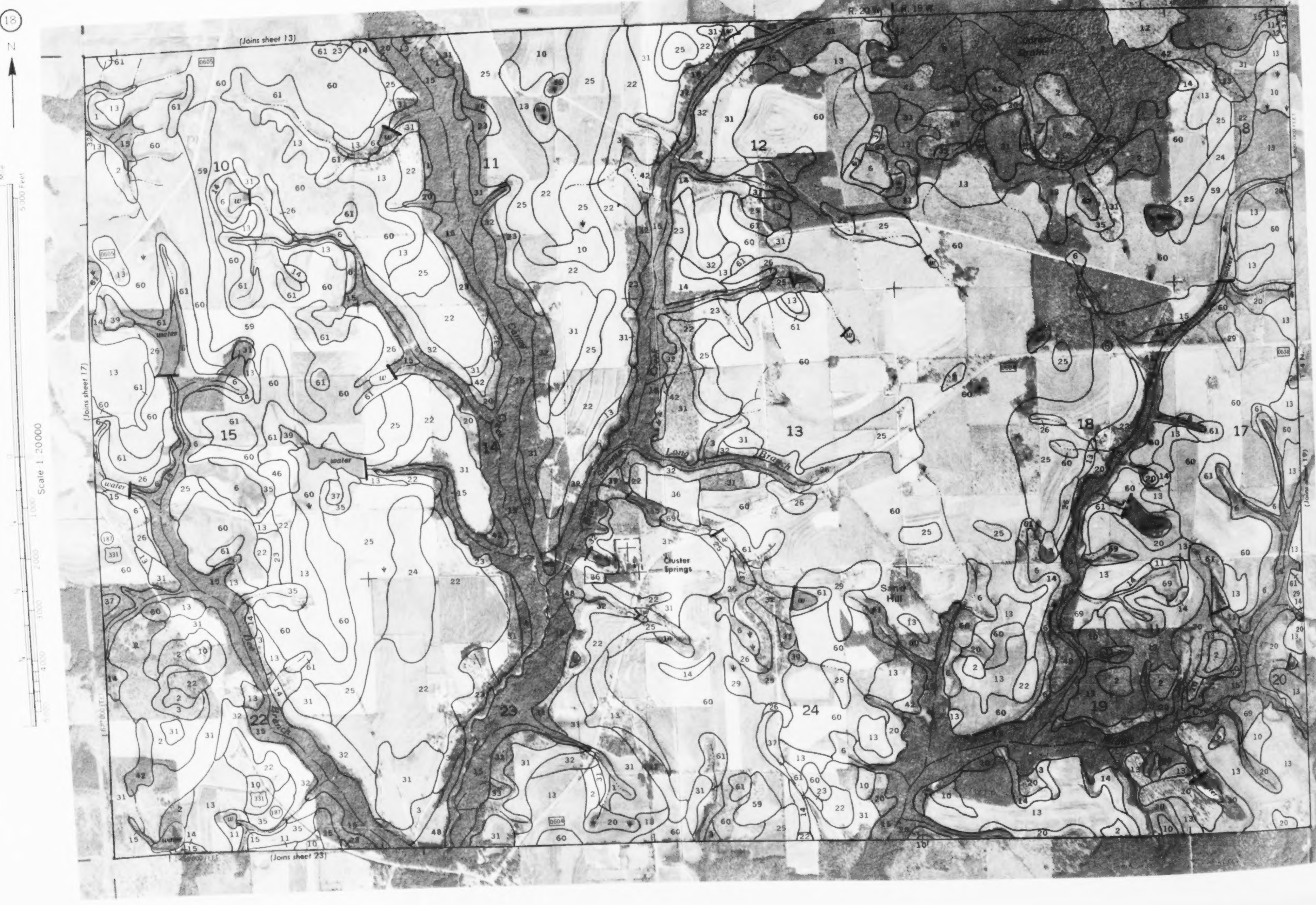

14
N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000
R. 19 W.
(Joins sheet 9)
(Joins sheet 13)
(Joins sheet 19)
Jack Bay
Cant Pond
water
Big Swamp Creek
Cat Pond
Weaver Springs
Balum Bay
Gum Creek Bay


HOLMES COUNTY
Pikehole Bay
Gum Creek Bay
Rattlesnake
T. 5 N.
(Joins sheet 14)
(Joins sheet
185
0499
15


⑯
N
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
(Joins sheet 11)
(Joins sheet 21)
(Joins sheet 17)
R. 21 W.
OKALOOSA COUNTY
Pine Log Creek
Long Creek
7
8
9
10
11
14
15
16
17
18
19
20
21
22
23

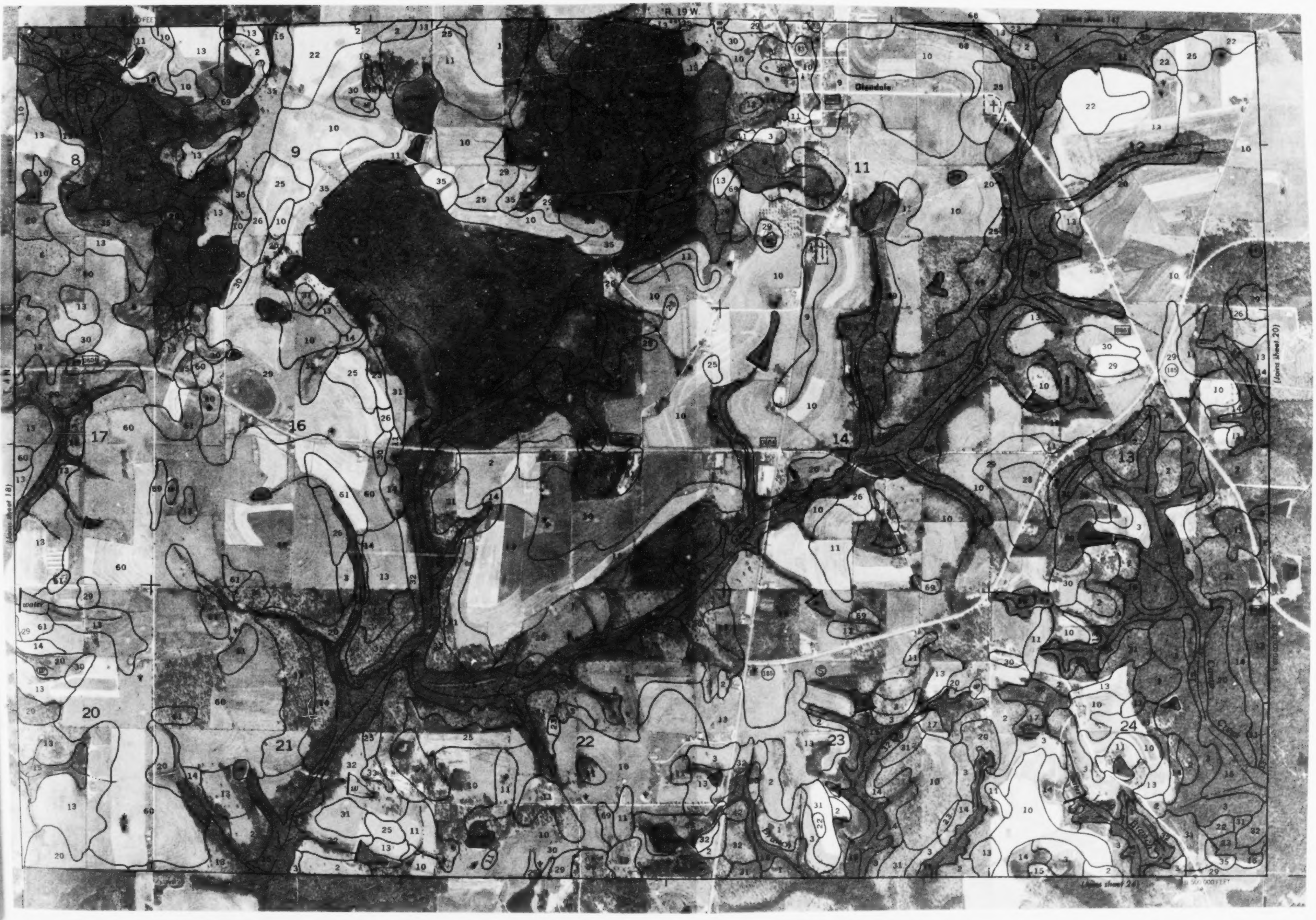

R. 21 W.
R. 20 W.
1 435 000 FEET
(Joins sheet 12)
(Joins sheet 18)
(Joins sheet 22)
1 450 000 FEET
0605
331
187
New Harmony
Fox Hill
0609
7
8
9
12
13
16
17
18
19
20
21
23

WALTON COUNTY, FLORIDA — SHEET NUMBER 18



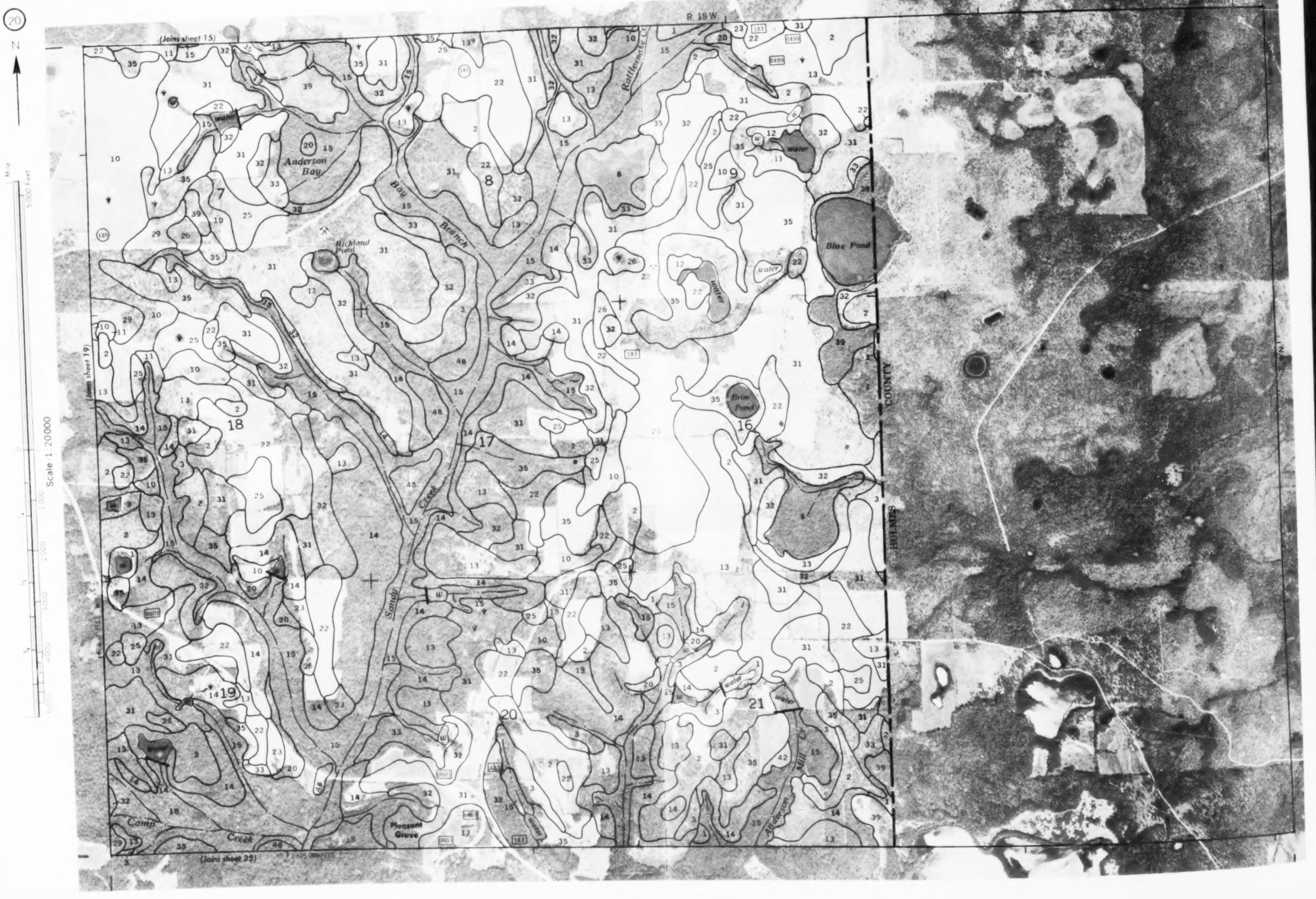
(18)
N
Scale 1:20000
1 Mile
5000 Feet
(Joins sheet 13)
(Joins sheet 17)
(Joins sheet 19)
(Joins sheet 23)
R. 20 W.
R. 19 W.
Cluster Springs
Sand Hill
Long Branch
water
0605
0604
331
187

WALTON COUNTY, FLORIDA — SHEET NUMBER 19

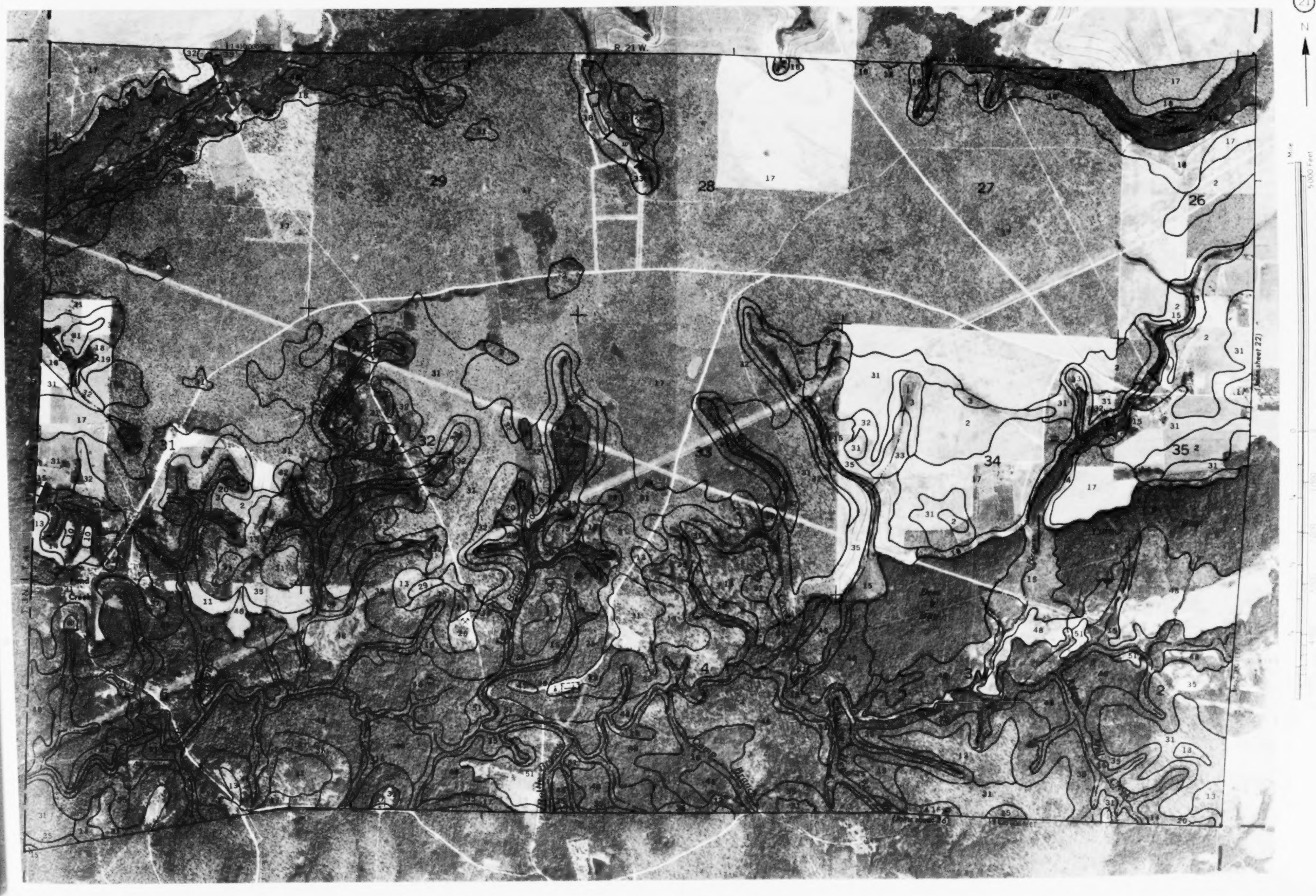


⑲
N
R. 19 W.
Glendale
(Joins sheet 14)
(Joins sheet 18)
(Joins sheet 20)
(Joins sheet 24)
Branch
water
1 Mile
5000 Feet

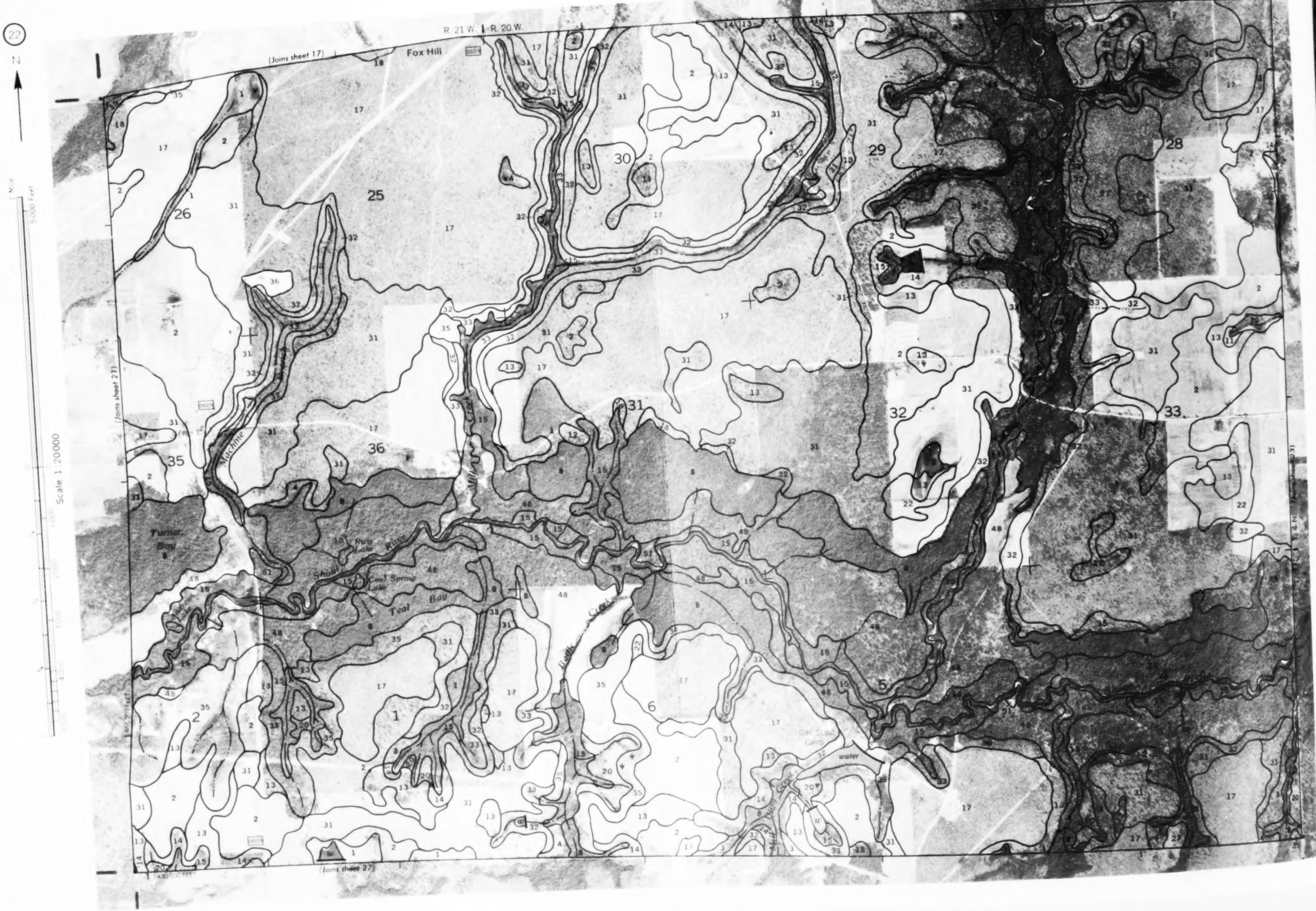
WALTON COUNTY, FLORIDA — SHEET NUMBER 20


20
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 15)
R 18 W.
(Joins sheet 19)
(Joins sheet 25)
Anderson Bay
Richland Pond
Bay Branch
Sandy Creek
Rattlesnake Cr.
Blue Pond
Brim Pond
water
Camp Creek
Pleasant Grove
Anderson Mill Cr.
HOLMES COUNTY
7
8
9
16
17
18
19
20
21

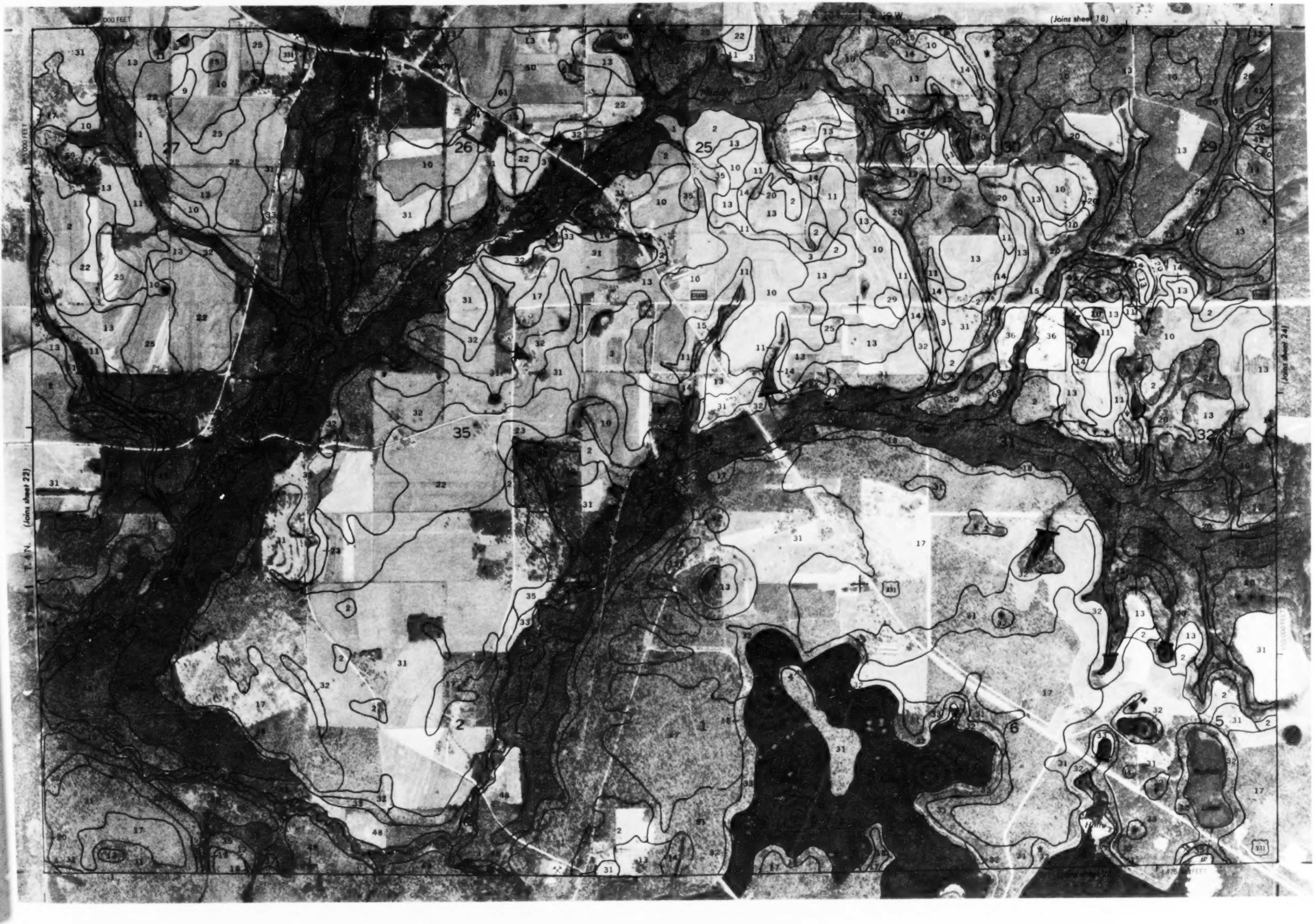
WALTON COUNTY, FLORIDA — SHEET NUMBER 21



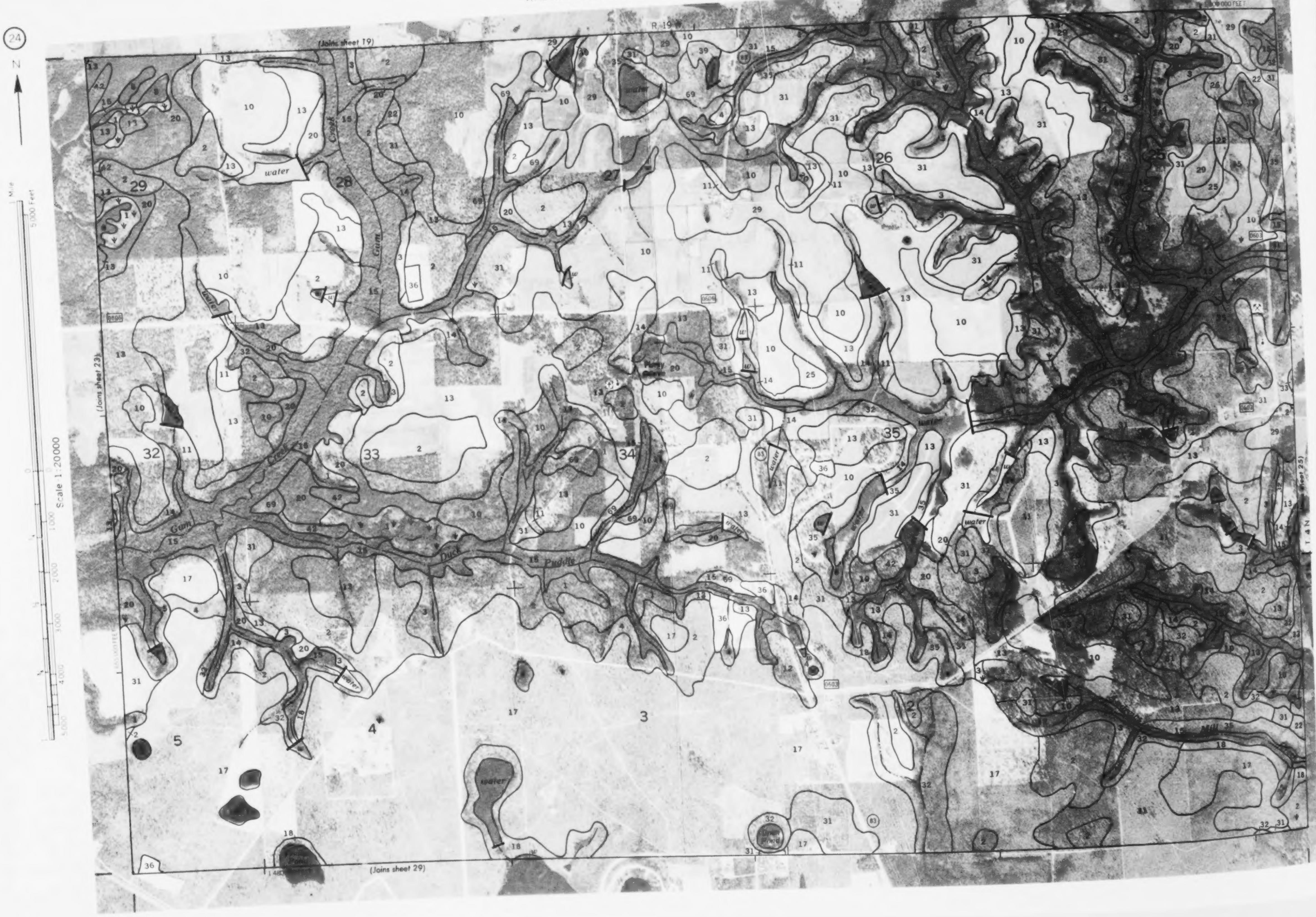
21
N
1 Mile
5000 Feet
R. 21 W.
T. 3 N.
29
28
27
26
31
32
33
34
35
6
4
3
2
(Joins sheet 22)
(Joins sheet 30)

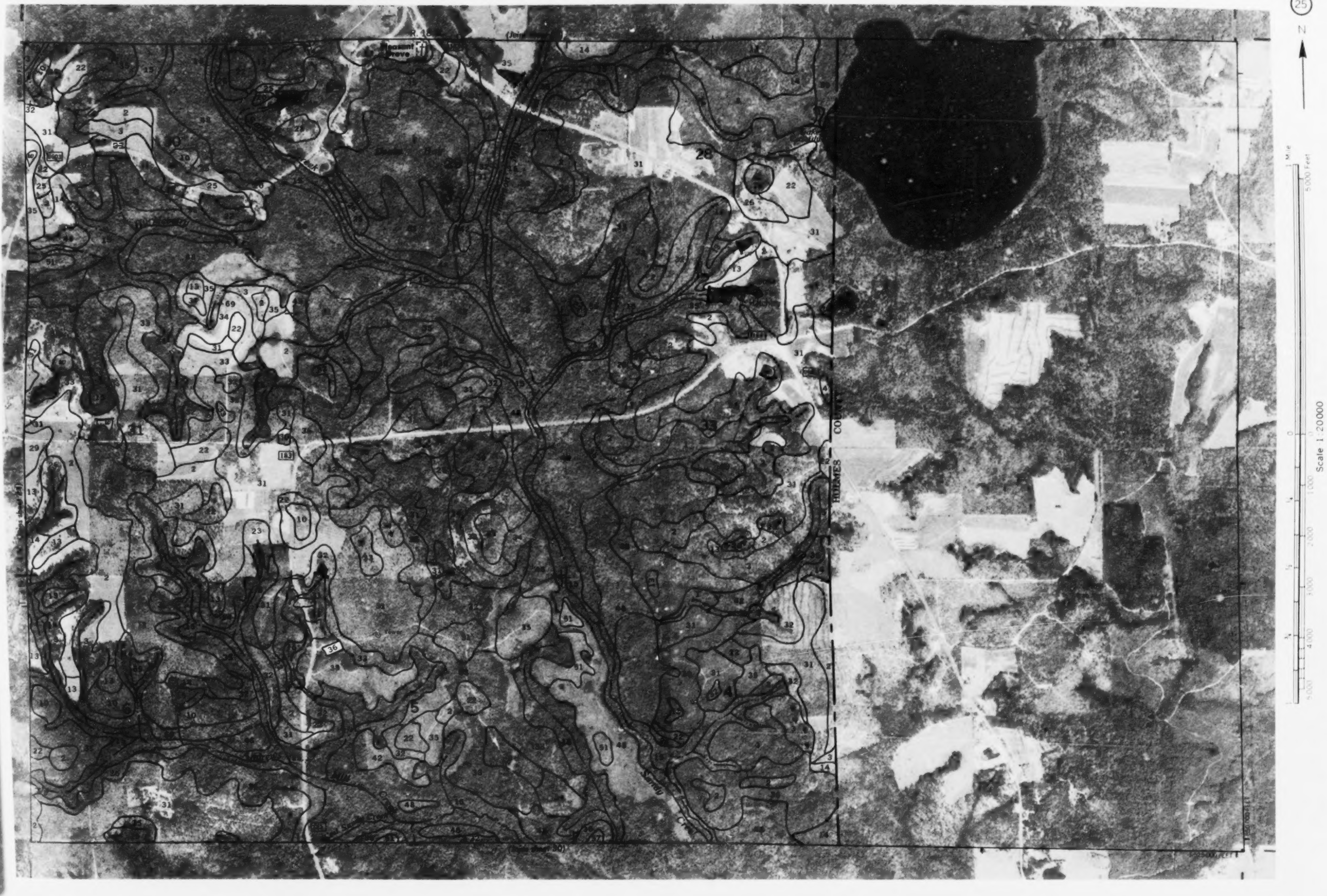

(22)
N
1 Mile
5000 Feet
Scale 1:20000
R. 21 W.
R. 20 W.
(Joins sheet 17)
Fox Hill
0609
1 450 000 FEET
(Joins sheet 21)
(Joins sheet 23)
(Joins sheet 27)
430 000 FEET
26
25
30
29
28
35
36
31
32
33
1
2
5
6
Machine
Mill Creek
Turner Bay
Rus Lake
Shoal River
Coal Spring Lake
Teal Bay
Bull Creek
Girl Scout Camp
water

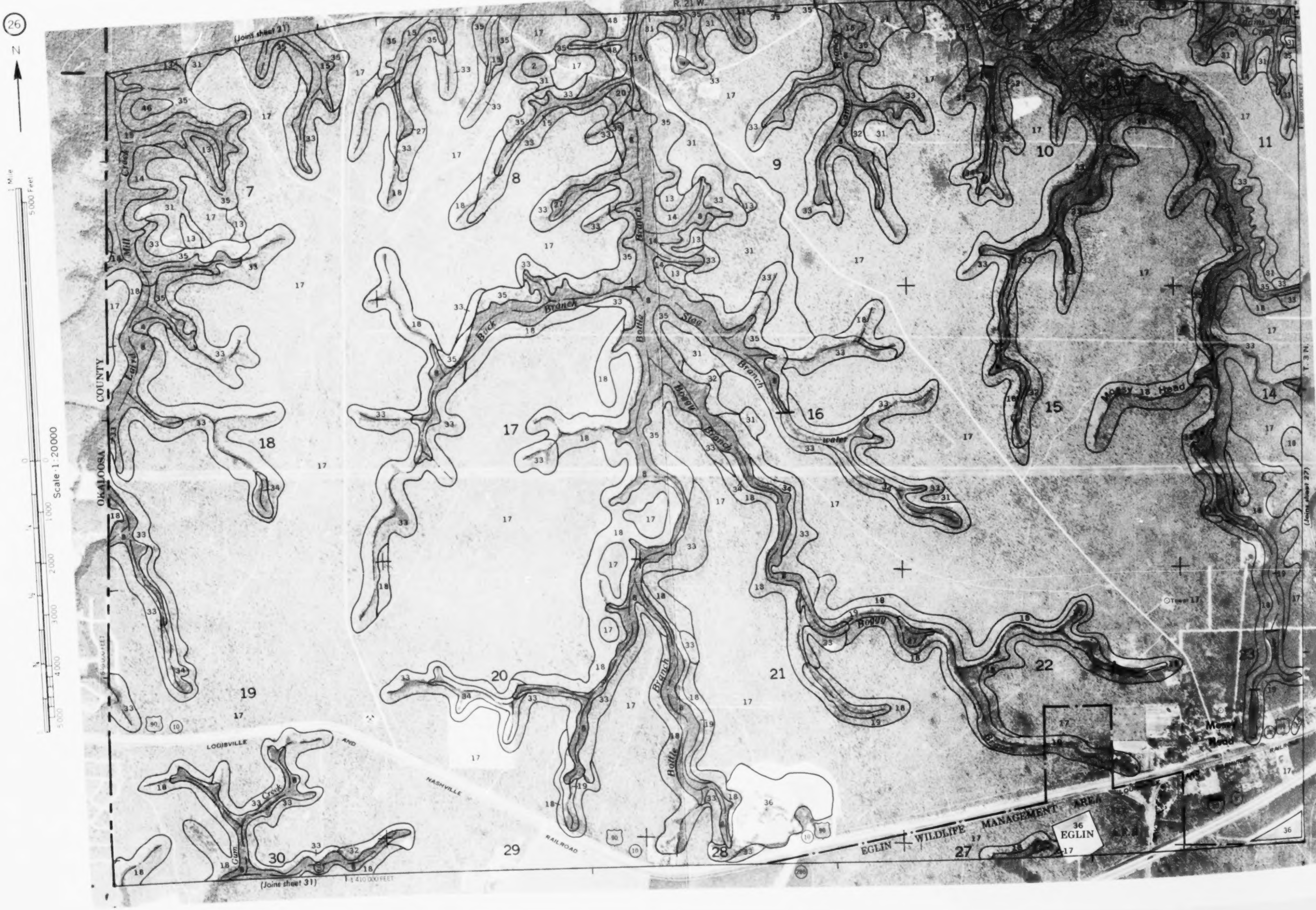
WALTON COUNTY, FLORIDA — SHEET NUMBER 23

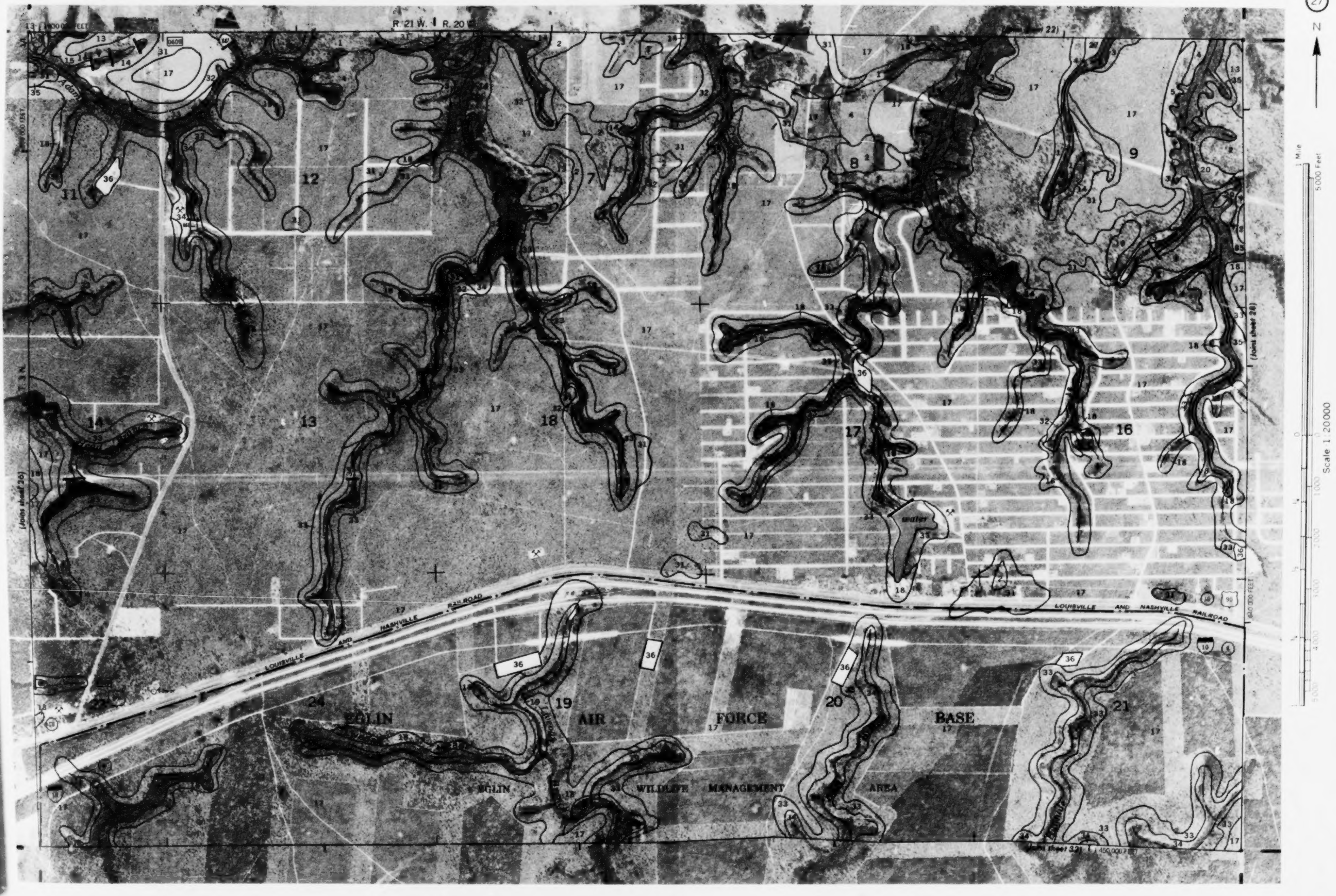


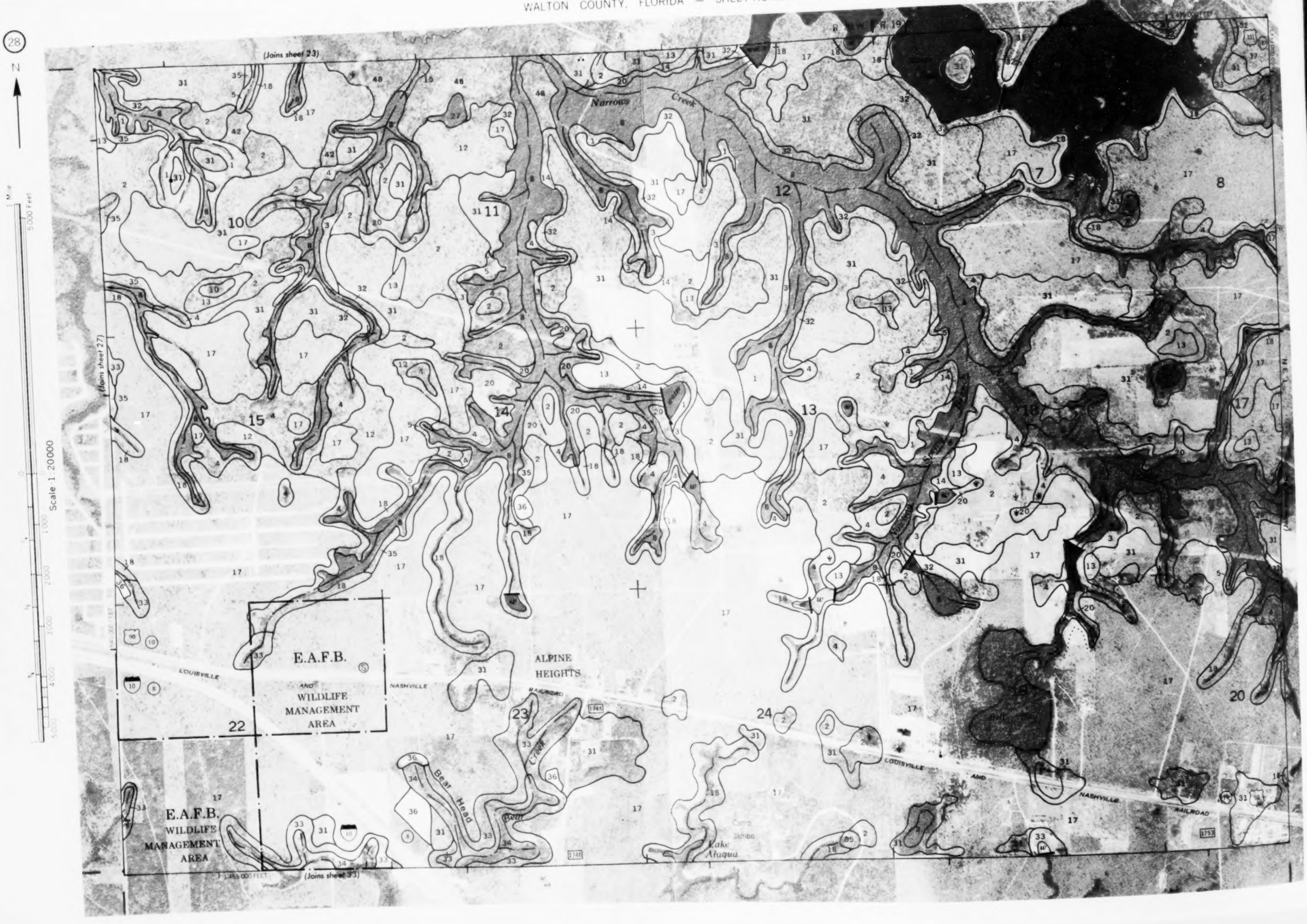
(Joins sheet 18)
(Joins sheet 22)
(Joins sheet 24)
T. 4 N.
1 000 FEET
331
27
26
25
30
29
35
31
32
1
2
6
5

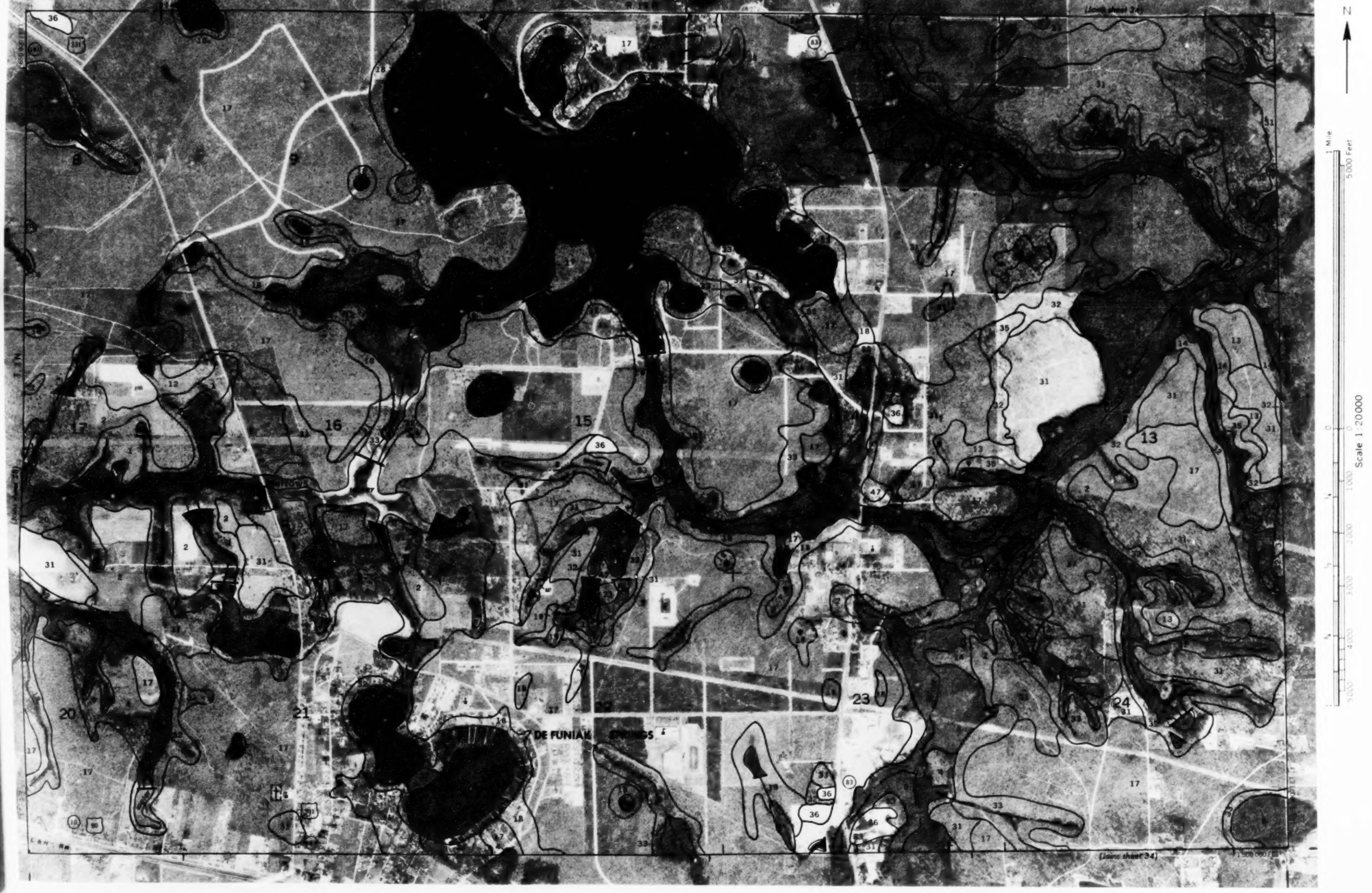

(24)
N
Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 19)
(Joins sheet 23)
(Joins sheet 25)
(Joins sheet 29)
R 19 W
T 4 N
Gum Creek
Duck Puddle
Mill
water
Piney Grove
Open Pond
26
27
28
29
32
33
34
35
25
2
3
4
5
17
10
13
31

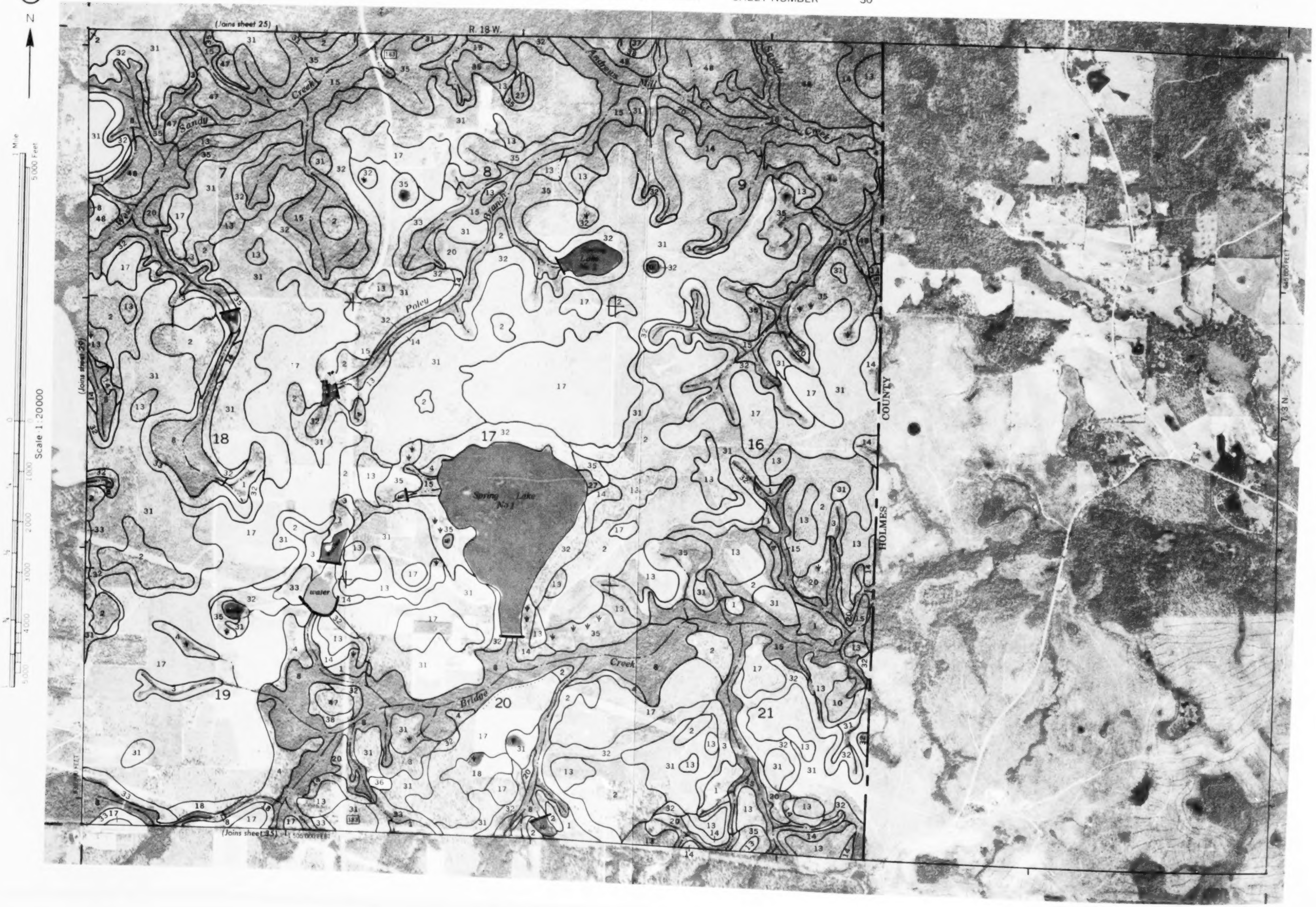

N
HOLMES COUNTY
Pleasant Grove
36
183
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000

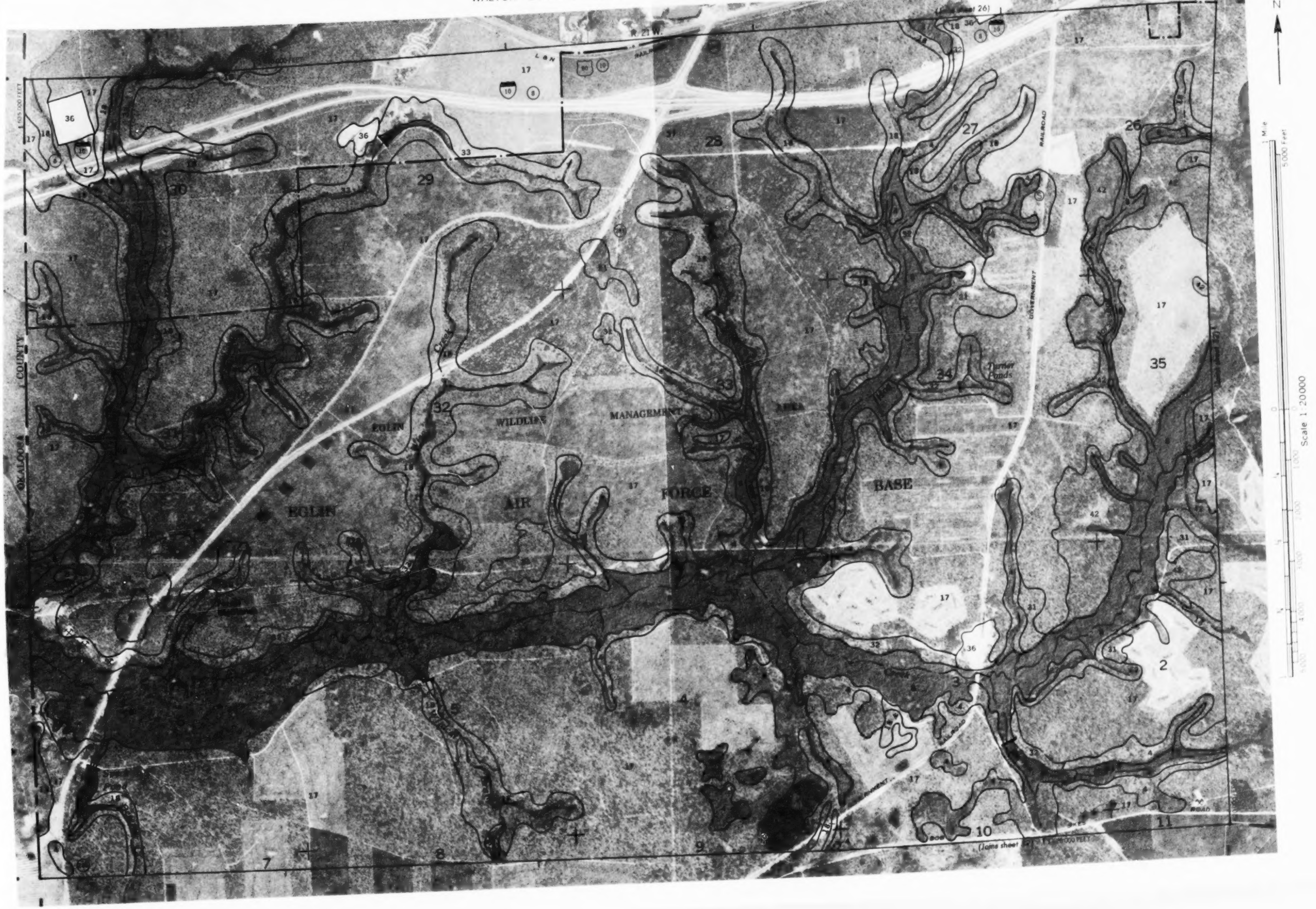

26
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
R. 21 W.
T. 3 N.
(Joins sheet 21)
(Joins sheet 27)
(Joins sheet 31)
OKALOOSA COUNTY
Mill Creek
Laird Creek
Buck Branch
Bottle Branch
Stag Branch
Boggy Branch
Mossy Head
Mossy Head
Gum Creek
water
Tower
LOUISVILLE AND NASHVILLE RAILROAD
EGLIN WILDLIFE MANAGEMENT AREA
EGLIN
1 410 000 FEET
7
8
9
10
11
14
15
16
17
18
19
20
21
22
23
27
28
29
30

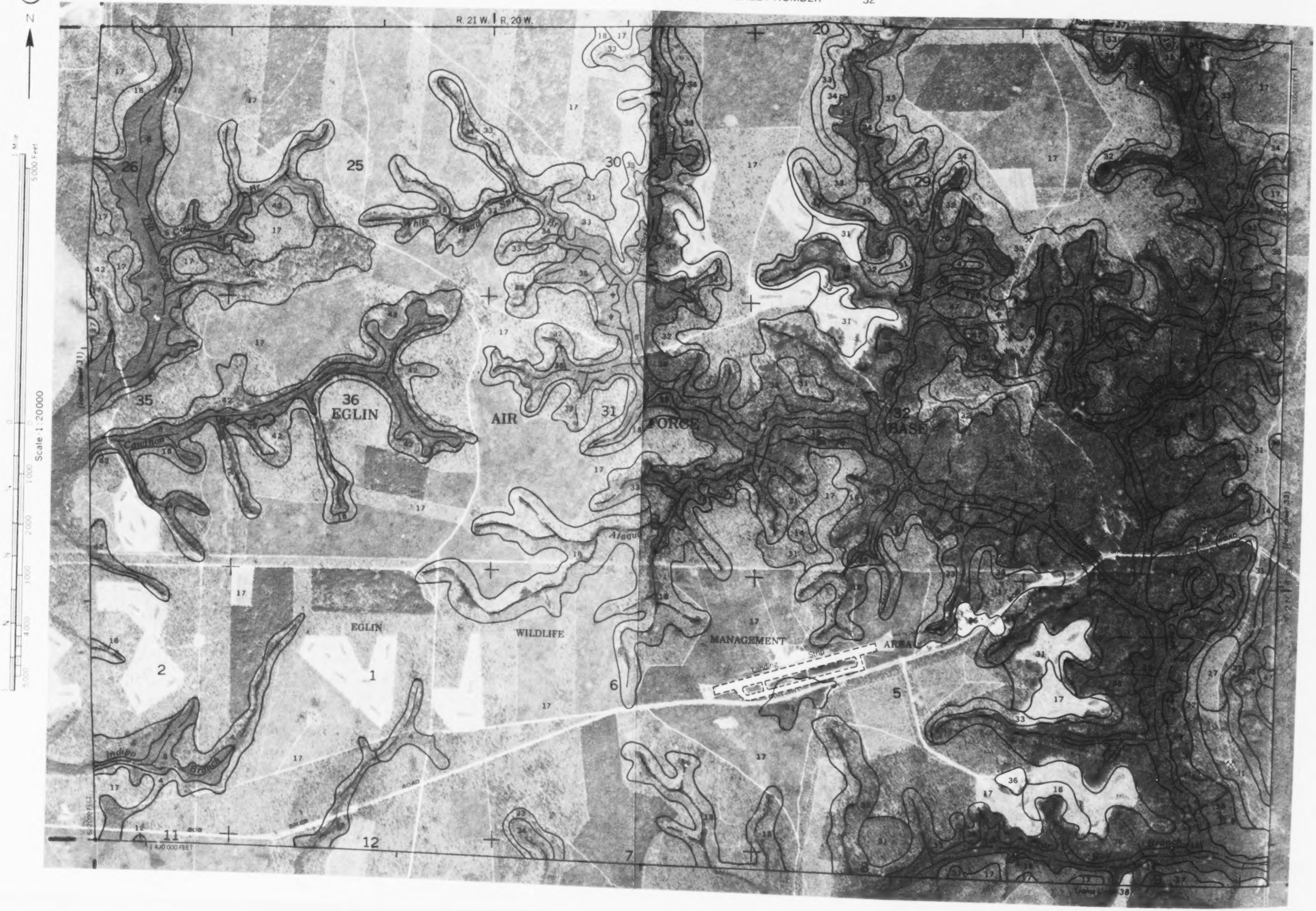

N
R. 21 W. R. 20 W.
(Joins sheet 26)
(Joins sheet 28)
(Joins sheet 32)
LOUISVILLE AND NASHVILLE RAILROAD
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
Water
1 Mile
5,000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000


N
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
(Joins sheet 23)
(Joins sheet 27)
(Joins sheet 33)
Narrows Creek
E.A.F.B.
AND WILDLIFE MANAGEMENT AREA
E.A.F.B. WILDLIFE MANAGEMENT AREA
ALPINE HEIGHTS
LOUISVILLE AND NASHVILLE RAILROAD
Bear Head Creek
Camp Jambo
Lake Alaqua
7
8
10
11
12
13
14
15
17
18
19
20
22
23
24
90
10
1746
1753

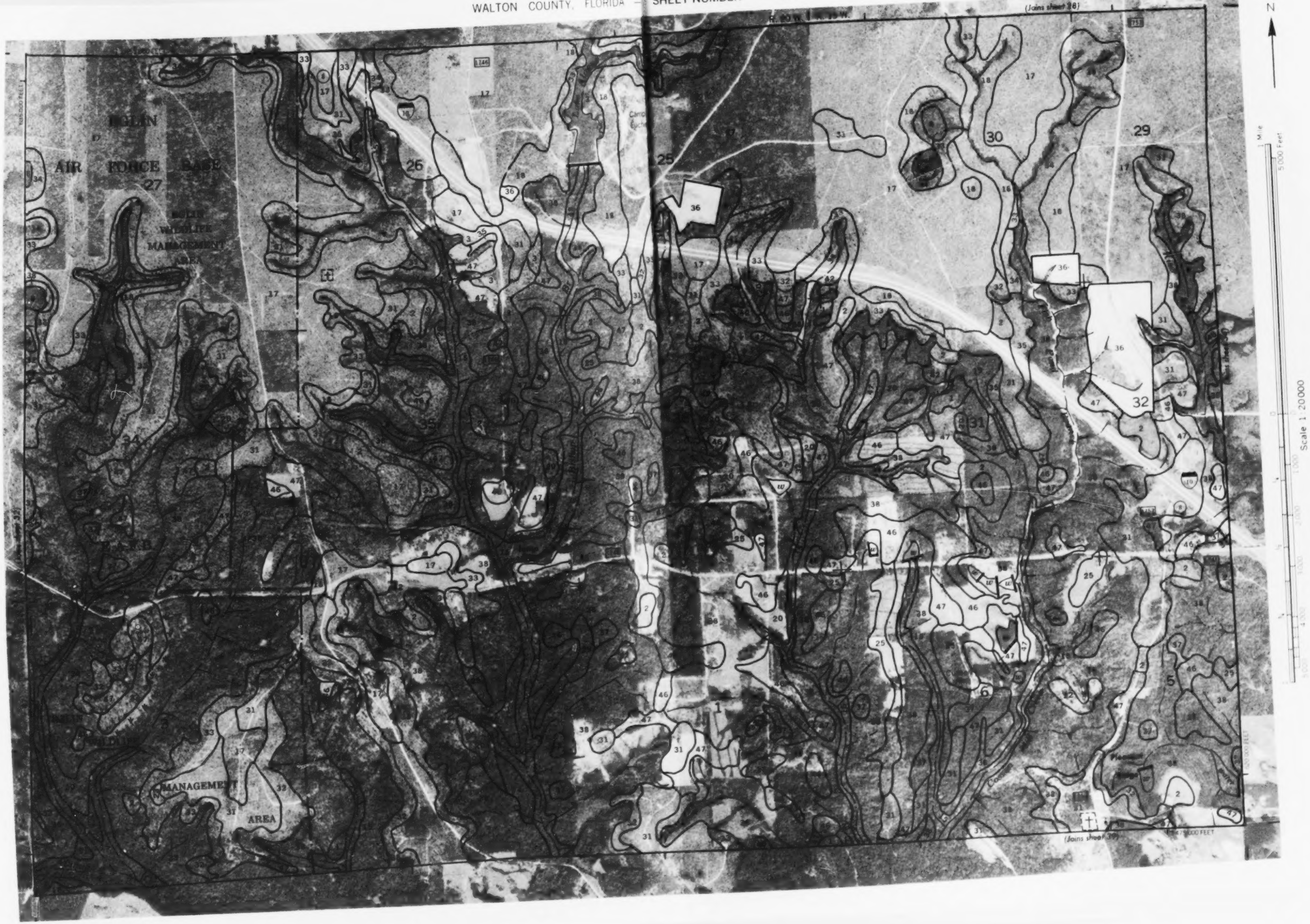

(Joins sheet 24)
(Joins sheet 34)
DE FUNIAK SPRINGS
N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000
83
331
17
31
32
33
36
13
16
15
20
21
23
24

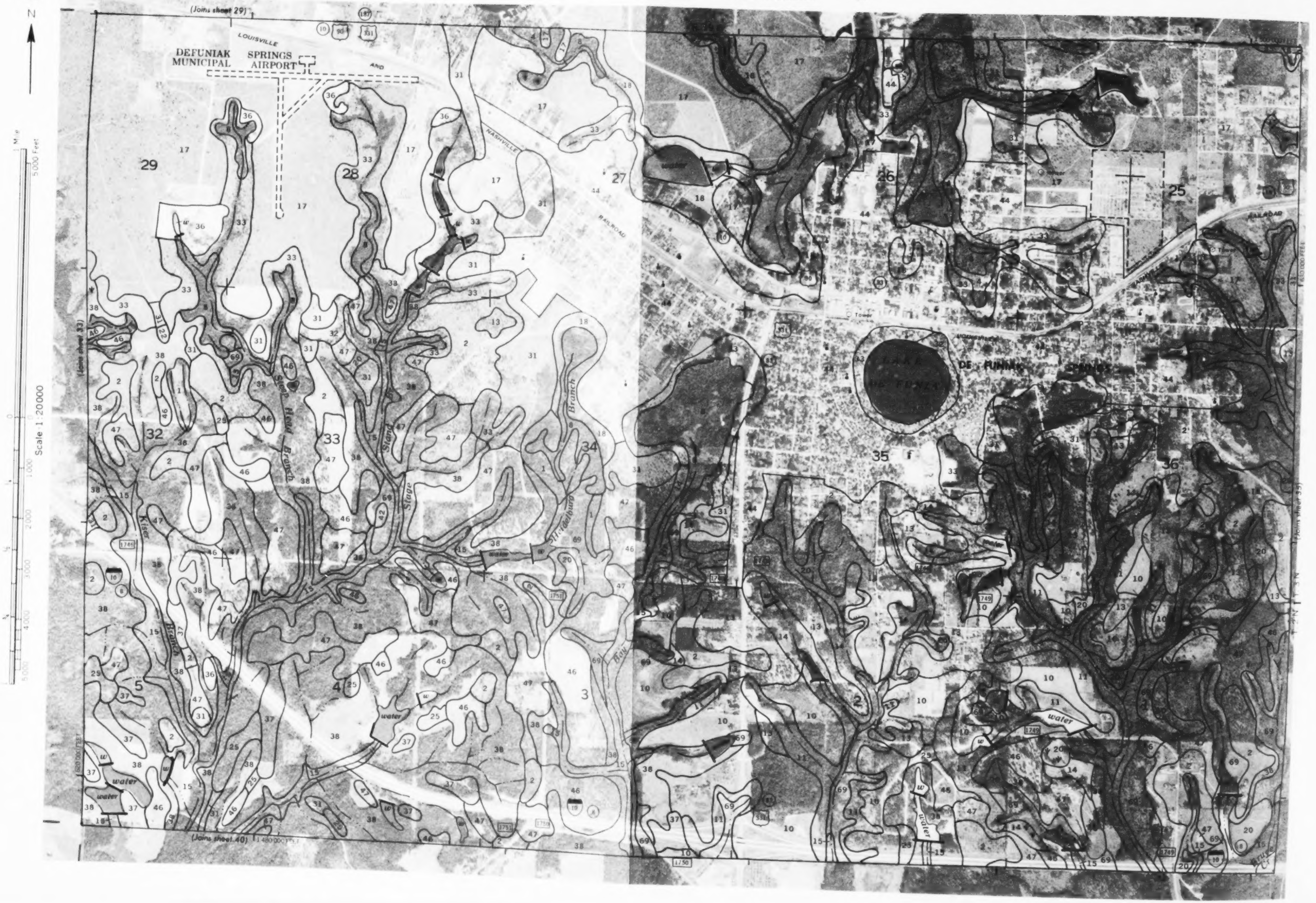

N
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 25)
R. 18 W.
(Joins sheet 29)
(Joins sheet 35)
1 505 000 FEET
Sandy Creek
West
Andrews Mill Creek
Sandy
Poley Branch
Spring Lake No 1
Spring Lake No 2
water
Bridge Creek
HOLMES COUNTY
T. 3 N.
7
8
9
16
17
18
19
20
21


N
(Joins sheet 26)
R. 21 W.
L & N RAILROAD
17
36
18
30
29
33
31
28
27
26
42
35
32
34
2
3
4
6
7
8
9
10
11
Creek
Turner Ponds
GOVERNMENT RAILROAD
OKALOOSA COUNTY
EGLIN WILDLIFE MANAGEMENT AREA
EGLIN AIR FORCE BASE
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000

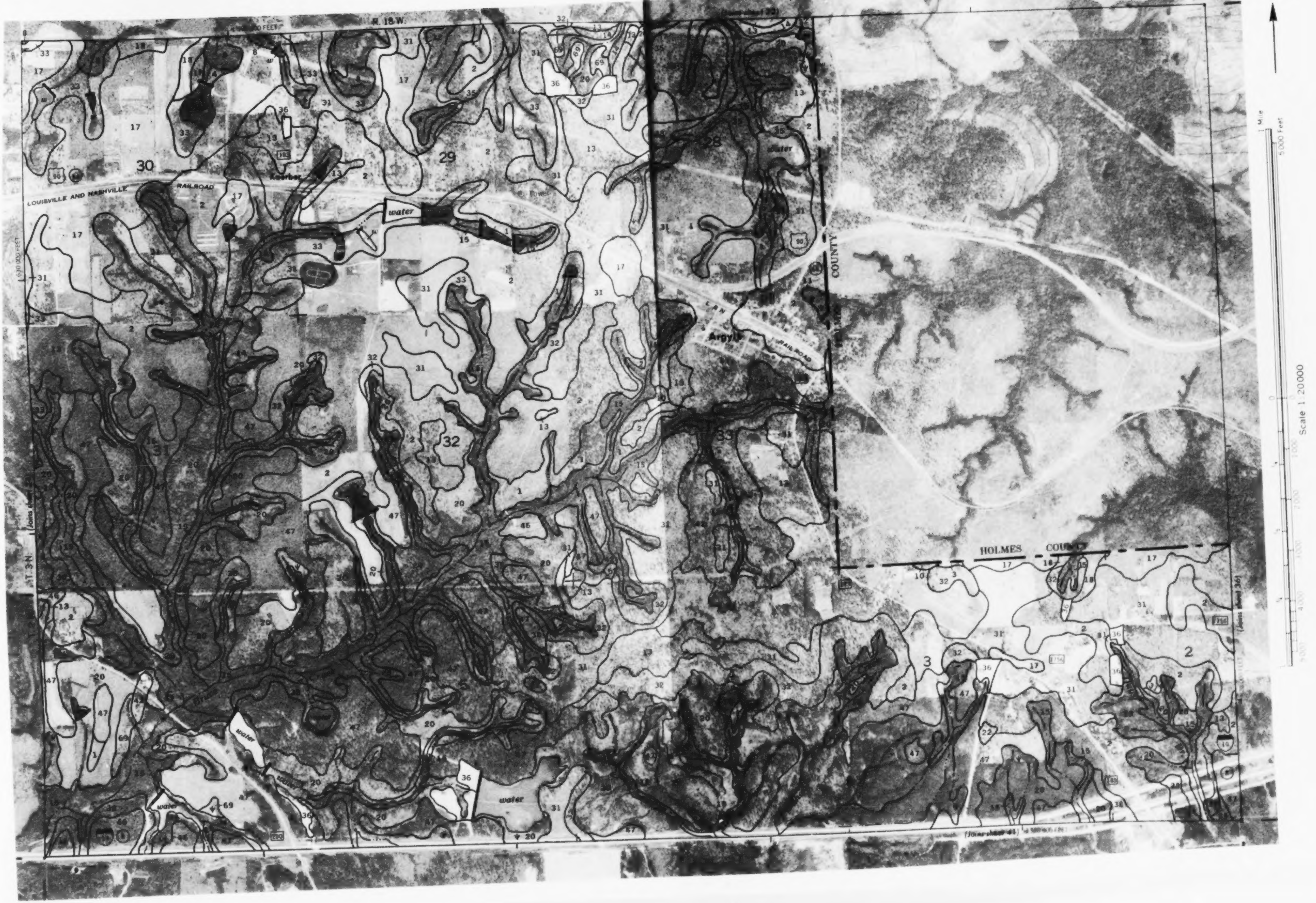

N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
R. 21 W.
R. 20 W.
EGLIN
AIR
FORCE
BASE
EGLIN
WILDLIFE
MANAGEMENT
AREA
Landing Strip
White Head Spring Br.
Alaqua
Indigo Branch
ROAD
2 N
20
25
26
29
30
31
32
33
35
36
1
2
5
6
7
8
11
12

WALTON COUNTY, FLORIDA — SHEET NUMBER

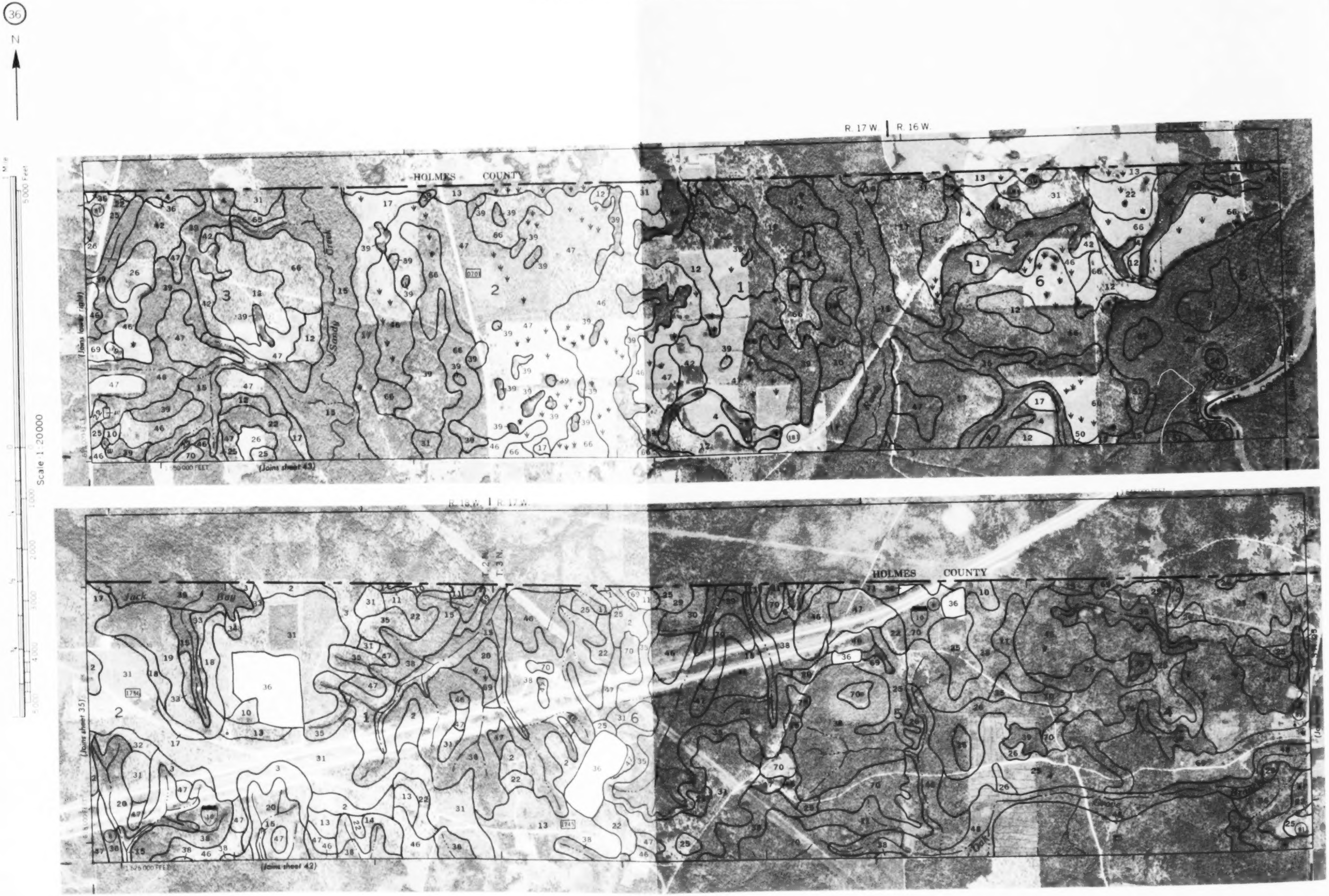

(Joins sheet 28)
R. 20 W. | R. 19 W.
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
MANAGEMENT AREA
27
26
25
30
29
34
35
31
32
1
6
5
Pleasant Ridge
(Joins sheet 39)
N
1 Mile
5000 Feet
Scale 1:20000

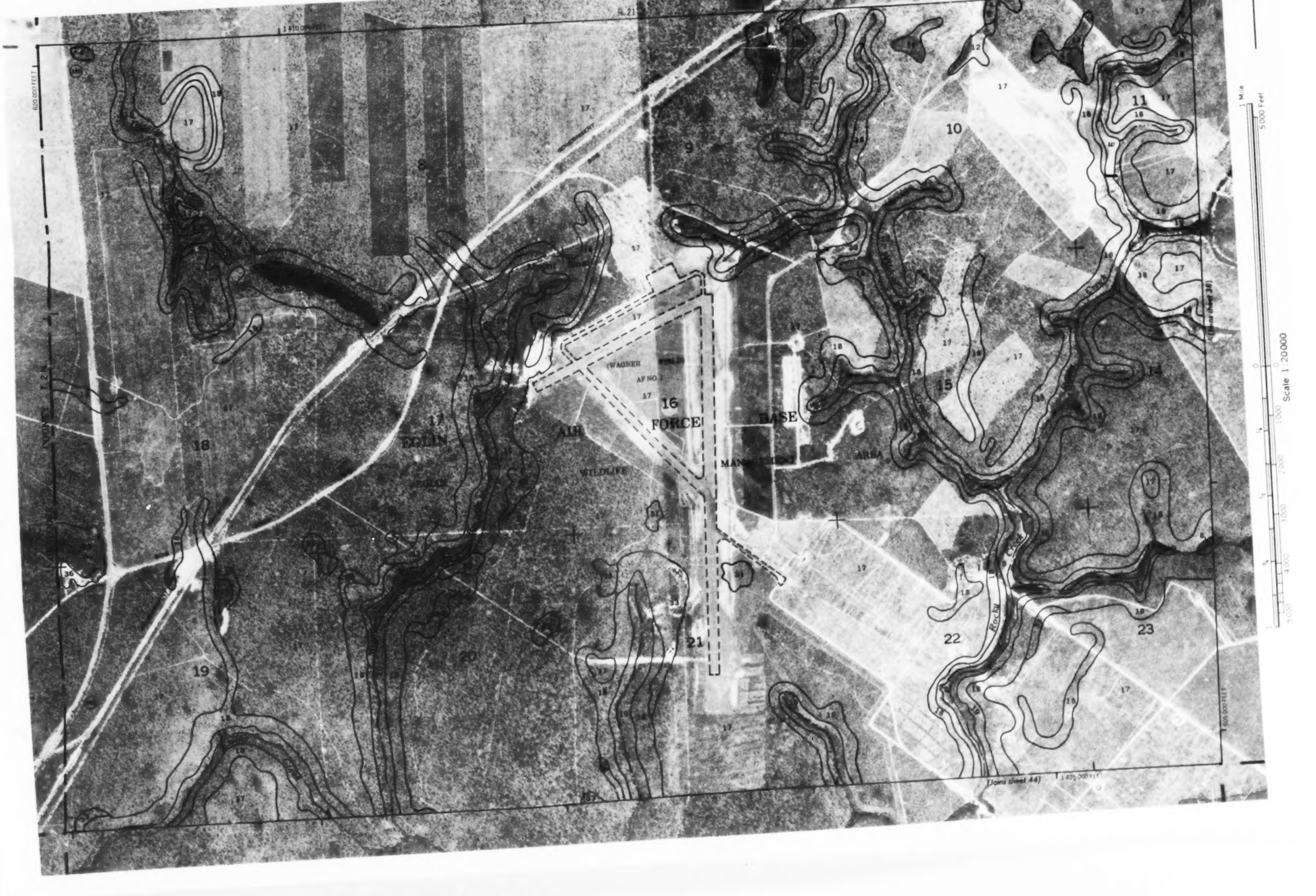

N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 29)
(Joins sheet 33)
(Joins sheet 35)
(Joins sheet 40)
DEFUNIAK MUNICIPAL SPRINGS AIRPORT
LOUISVILLE AND NASHVILLE RAILROAD
LAKE DE FUNIAK
DE FUNIAK SPRINGS
Sheep Head Branch
Stage Stand Branch
Middleburg Branch
Kiser Branch
Bay
Tower
water
w
29
28
27
26
25
32
33
34
35
36
5
4
3
2
1 480 000 FEET

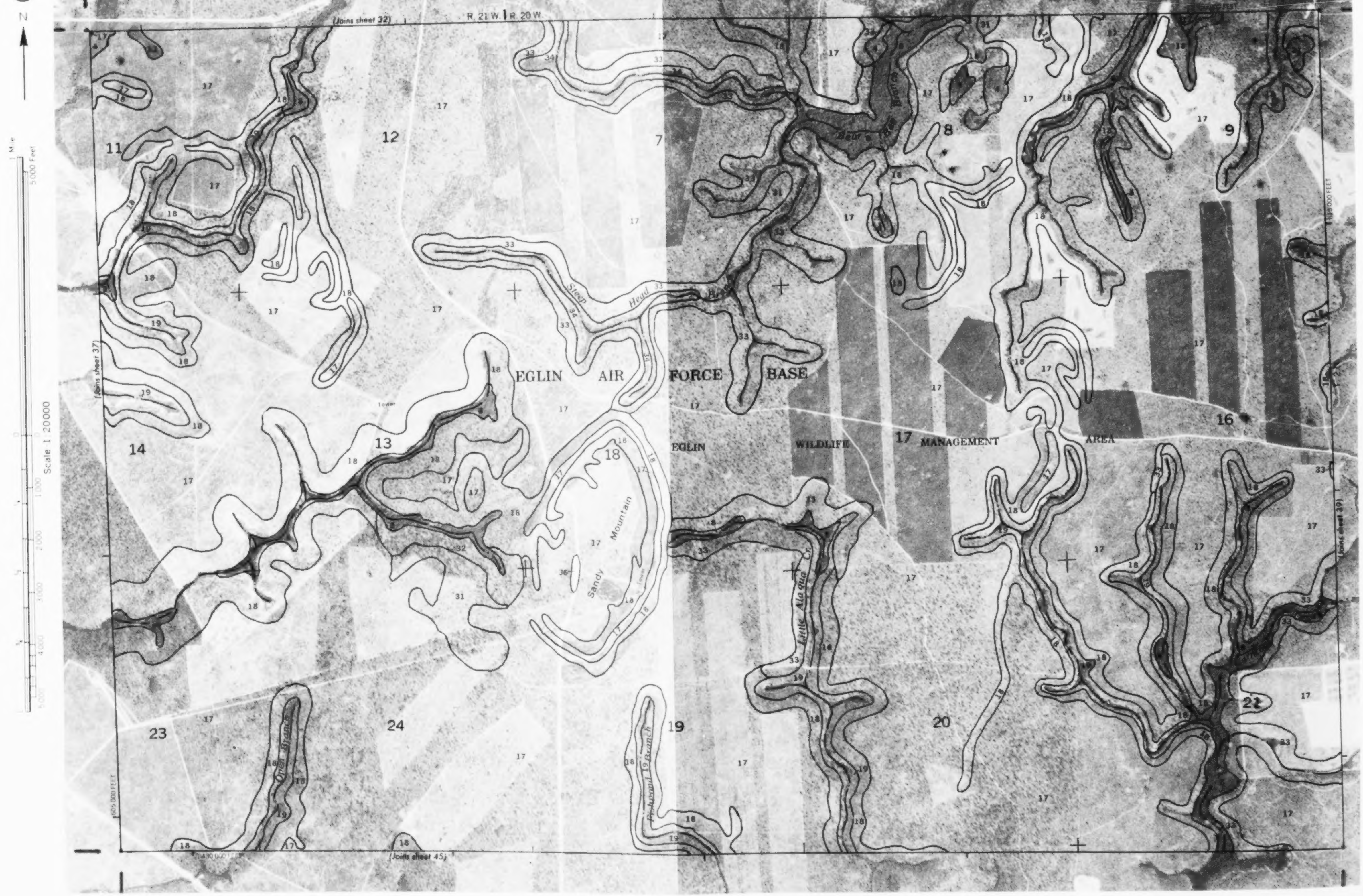
WALTON COUNTY, FLORIDA — SHEET NUMBER 35

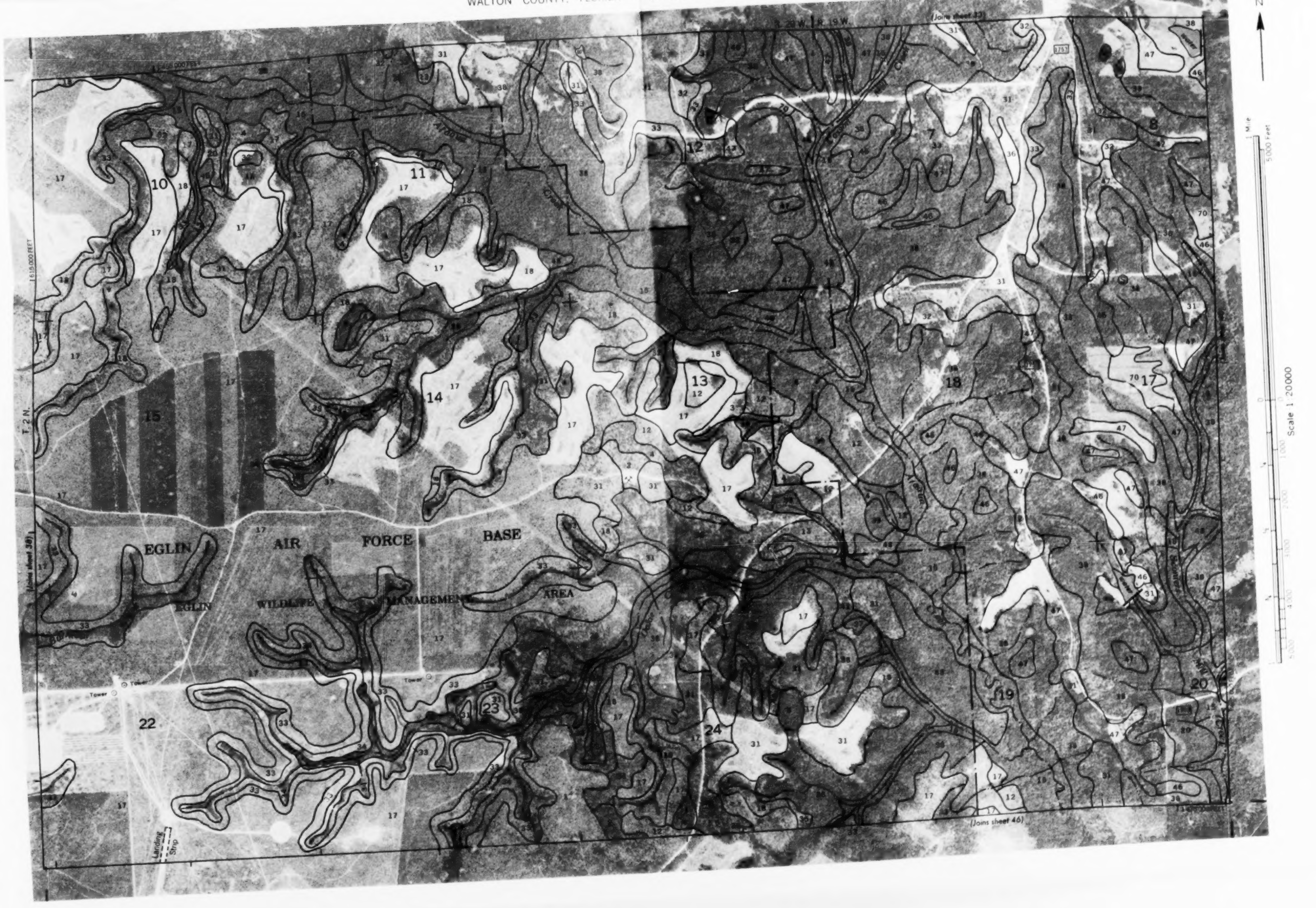

N
R. 18 W.
T. 3 N.
(Joins sheet 23)
(Joins sheet 34)
(Joins sheet 36)
(Joins sheet 41)
LOUISVILLE AND NASHVILLE RAILROAD
L & N RAILROAD
Argyle
HOLMES COUNTY
COUNTY
water
30
29
28
32
33
1 Mile
5 000 Feet
Scale 1:20 000
0
1000
2000
3000
4000
5000

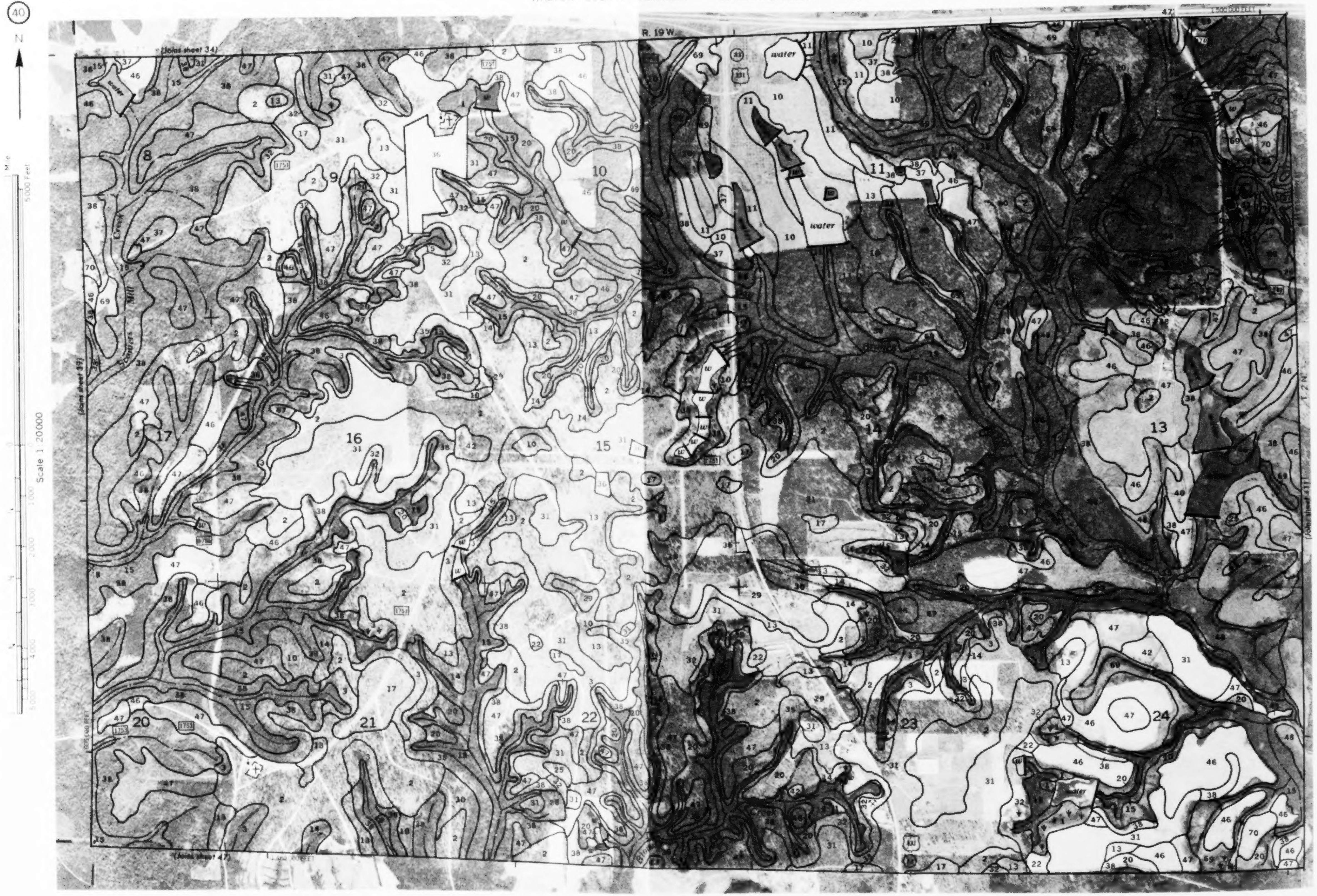
WALTON COUNTY, FLORIDA — SHEET NUMBER 36


(36)
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
R. 17 W.
R. 16 W.
HOLMES COUNTY
Sandy Creek
(Joins lower right)
1 550 000 FEET
(Joins sheet 43)
R. 18 W.
R. 17 W.
T. 2 N.
T. 3 N.
Jack Bay
(Joins sheet 35)
1 525 000 FEET
(Joins sheet 42)

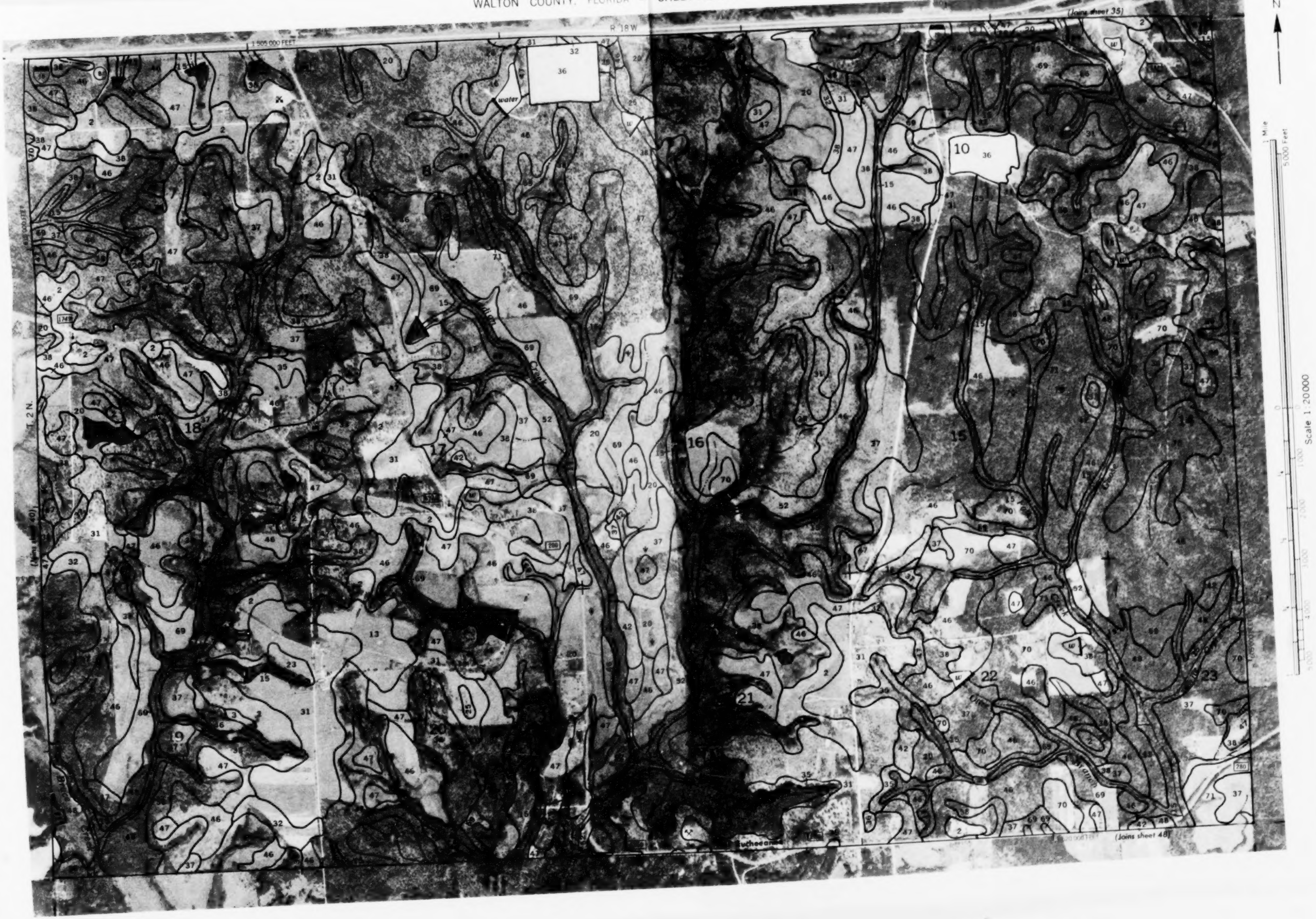

R. 21
1 410 000 FEET
620 000 FEET
EGLIN
AIR
FORCE
BASE
(WAGNER FIELD
AF NO. 1
WILDLIFE
MANAGEMENT
AREA
Rocky Creek
(Joins sheet 38)
(Joins sheet 44)
1 425 000 FEET
605 000 FEET
7
8
9
10
11
12
14
15
16
17
18
19
20
21
22
23
36
1 Mile
5000 Feet
0
¼
½
¾
1
0
1000
2000
3000
4000
5000
Scale 1:20000


N
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 32)
R. 21 W.
R. 20 W.
(Joins sheet 37)
(Joins sheet 39)
(Joins sheet 45)
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
Steep Head Branch
Bear Branch
Sandy Mountain
Little Alaqua Cr.
Dixon Branch
Richbourg Branch
Tower
Fence
605 000 FEET
430 000 FEET
535 000 FEET
7
8
9
11
12
13
14
16
17
18
19
20
21
23
24
31
32
33
34
36

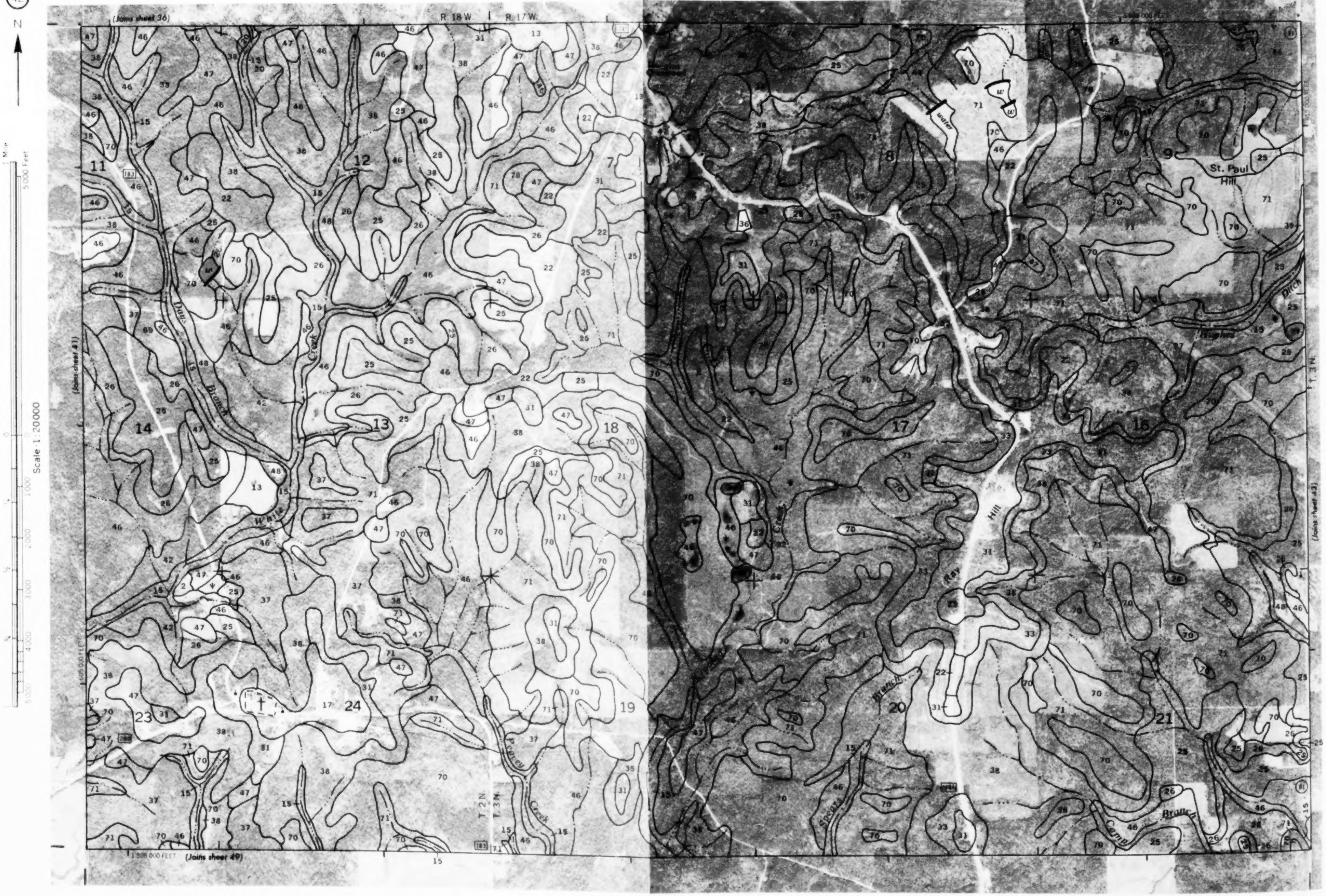

(Joins sheet 33)
R. 20 W. R. 19 W.
1 458 000 FEET
1 515 000 FEET
T. 2 N.
(Joins sheet 38)
(Joins sheet 46)
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
Tower
Landing Strip
7
8
10
11
12
13
14
15
17
18
19
20
22
23
24
N
1 Mile
5000 Feet
Scale 1:20 000
0
1000
2000
3000
4000
5000

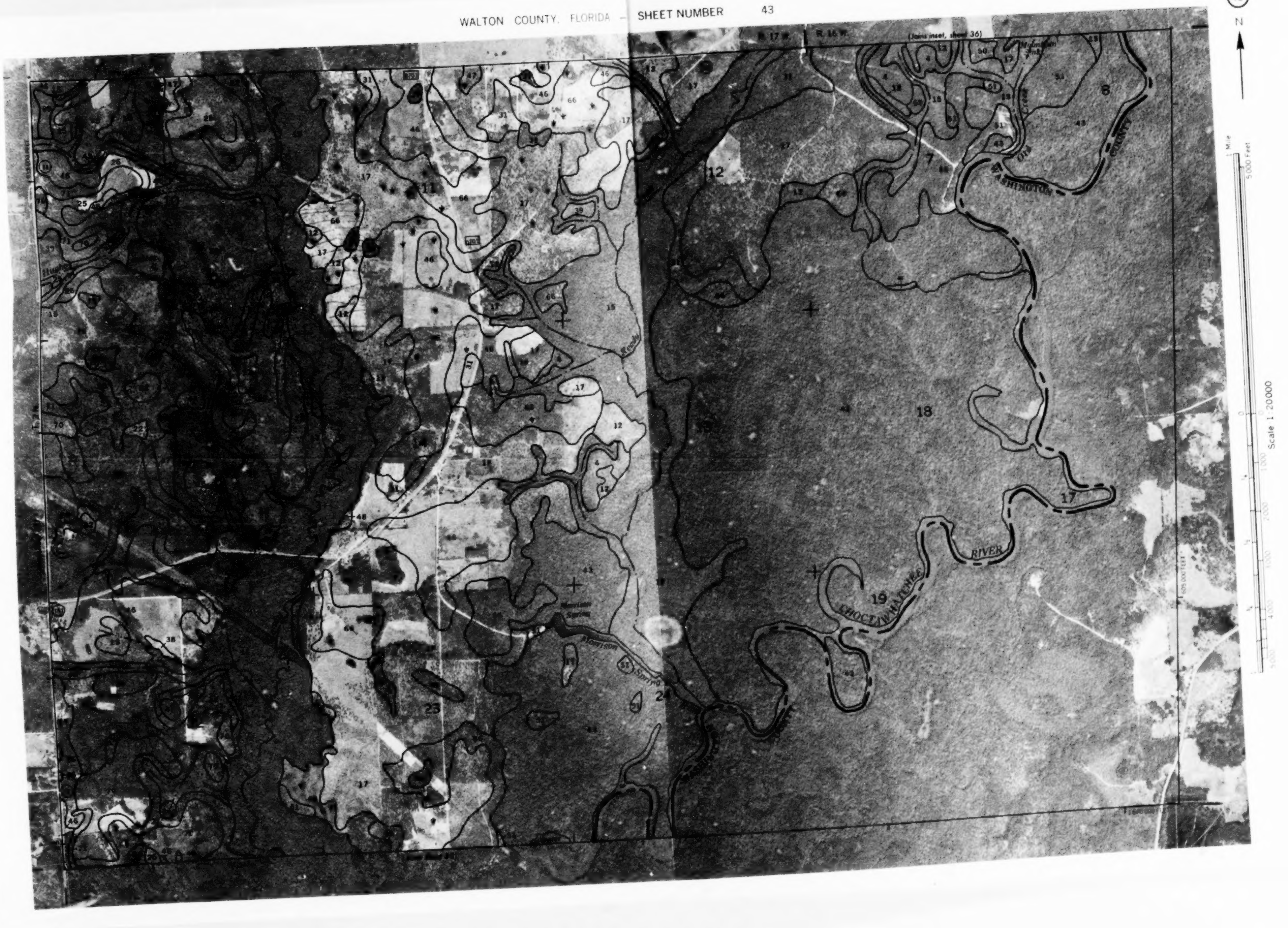

N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000
(Join sheet 34)
(Join sheet 39)
(Join sheet 41)
(Join sheet 47)
R. 19 W.
T. 2 N.
Mill
Creek
water
w
331
83
1751
1753
8
9
10
11
13
14
15
16
17
20
21
22
23
24

WALTON COUNTY, FLORIDA — SHEET NUMBER 41

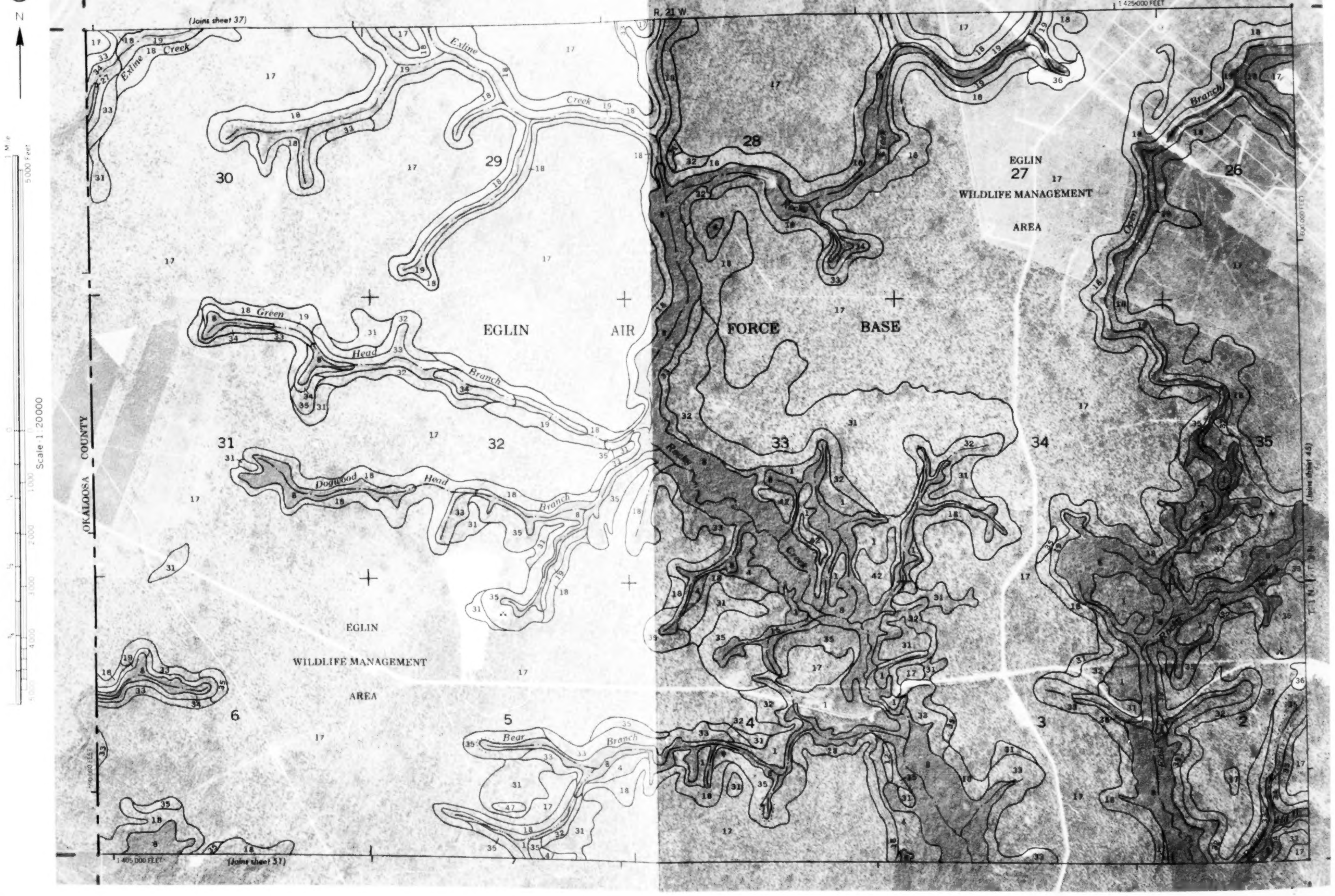

R 18 W
1 505 000 FEET
(Joins sheet 35)
(Joins sheet 40)
(Joins sheet 48)
T. 2 N.
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
water
Creek
Branch
Eucheeanna
8
10
15
16
17
18
19
20
21
22
23

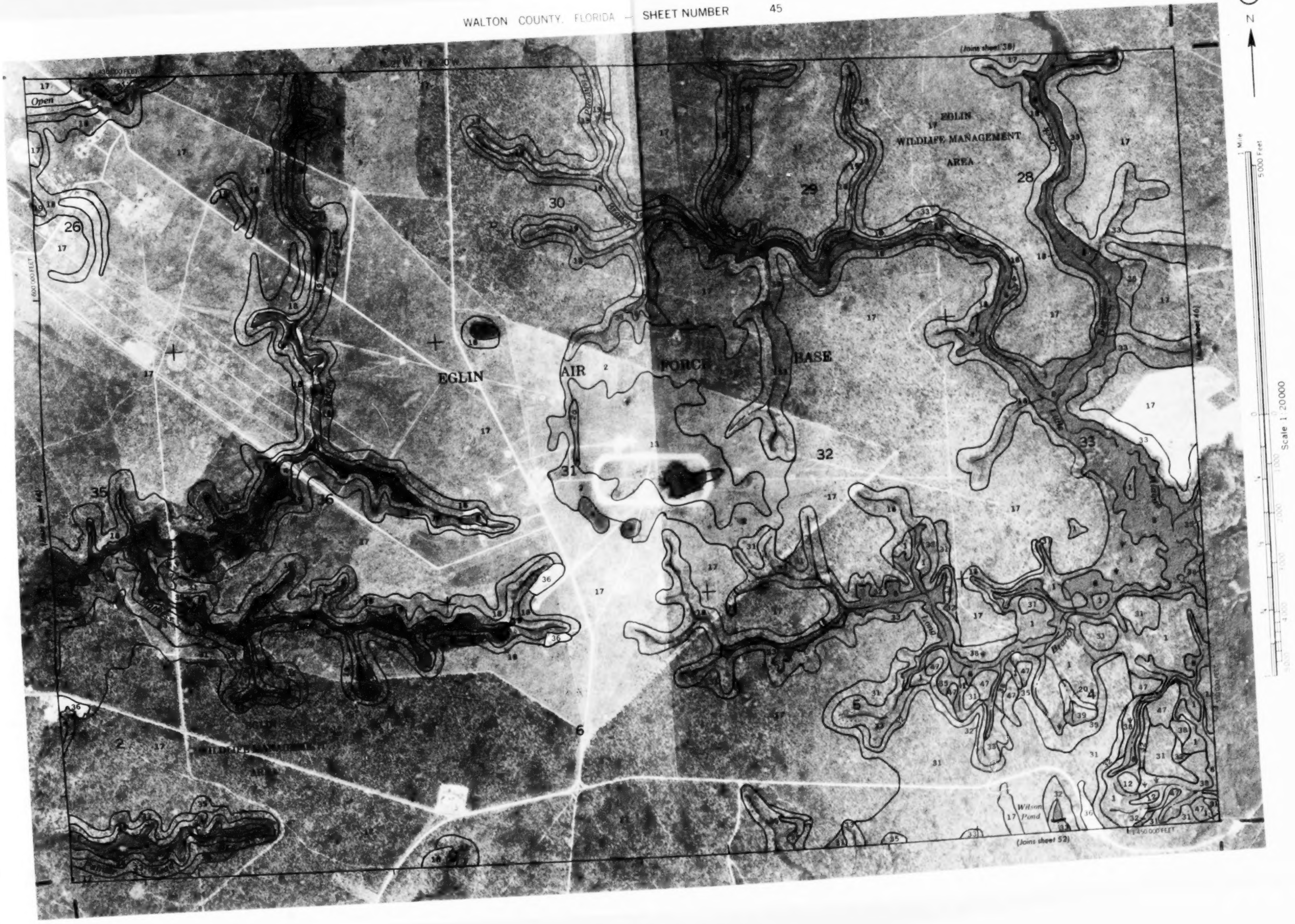
WALTON COUNTY FLORIDA — SHEET NUMBER 42

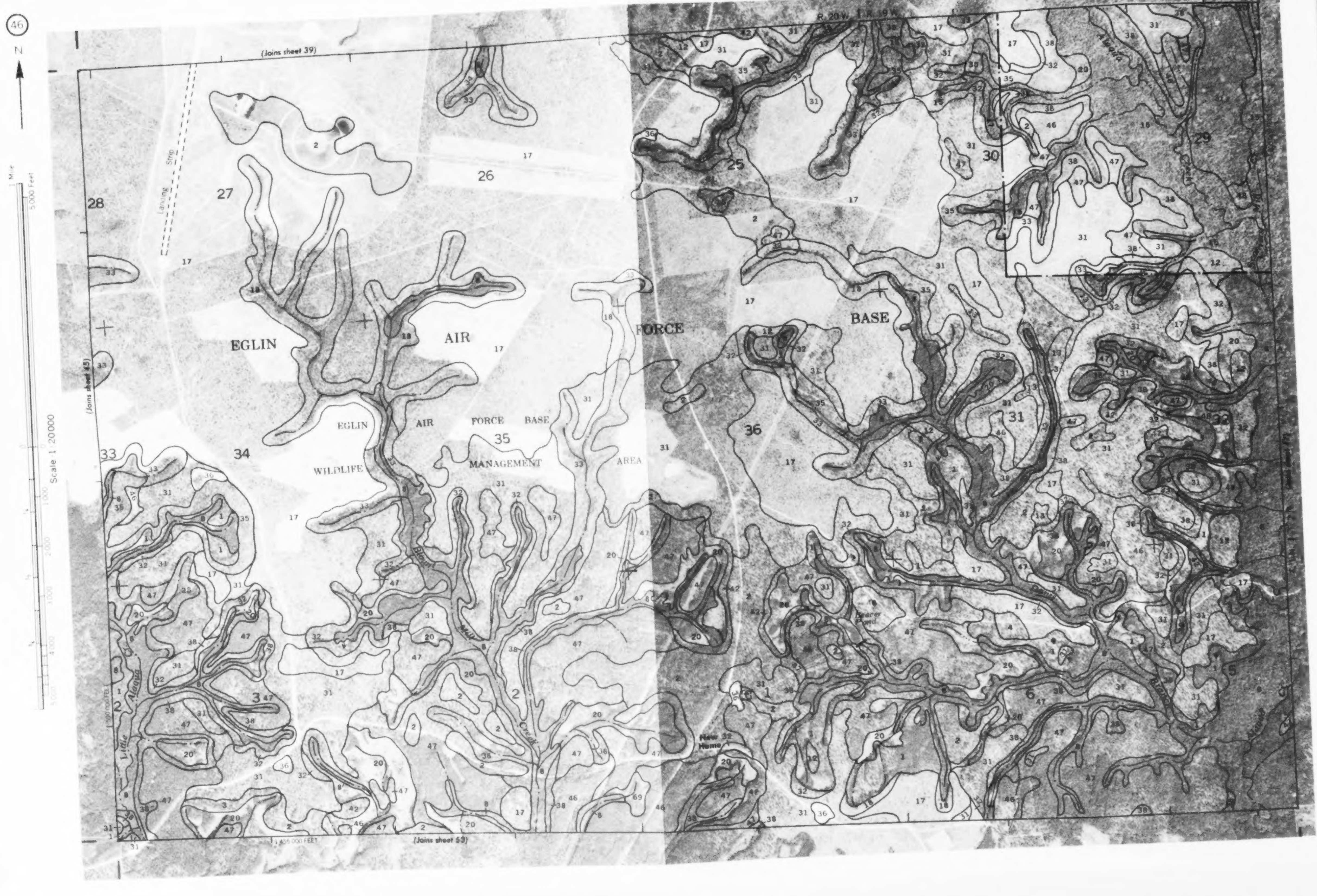

N
Scale 1:20 000
1 Mile
5000 Feet
(Joins sheet 36)
R. 18 W.
R. 17 W.
(Joins sheet 41)
(Joins sheet 43)
(Joins sheet 49)
1 505 000 FEET
T. 2 N.
T. 3 N.
T. 3 N.
Daus Branch
White Creek
Peavey Creek
Ray Hill
St. Paul Hill
Spears Branch
Camp Branch
Hughes Ditch
water
183
11
12
7
8
9
14
13
18
17
16
23
24
19
20
21


R. 17 W.
R. 16 W.
(Joins inset, sheet 36)
WASHINGTON COUNTY
CHOCTAWHATCHEE
RIVER
Morrison Springs
N
1 Mile
5000 Feet
Scale 1:20000

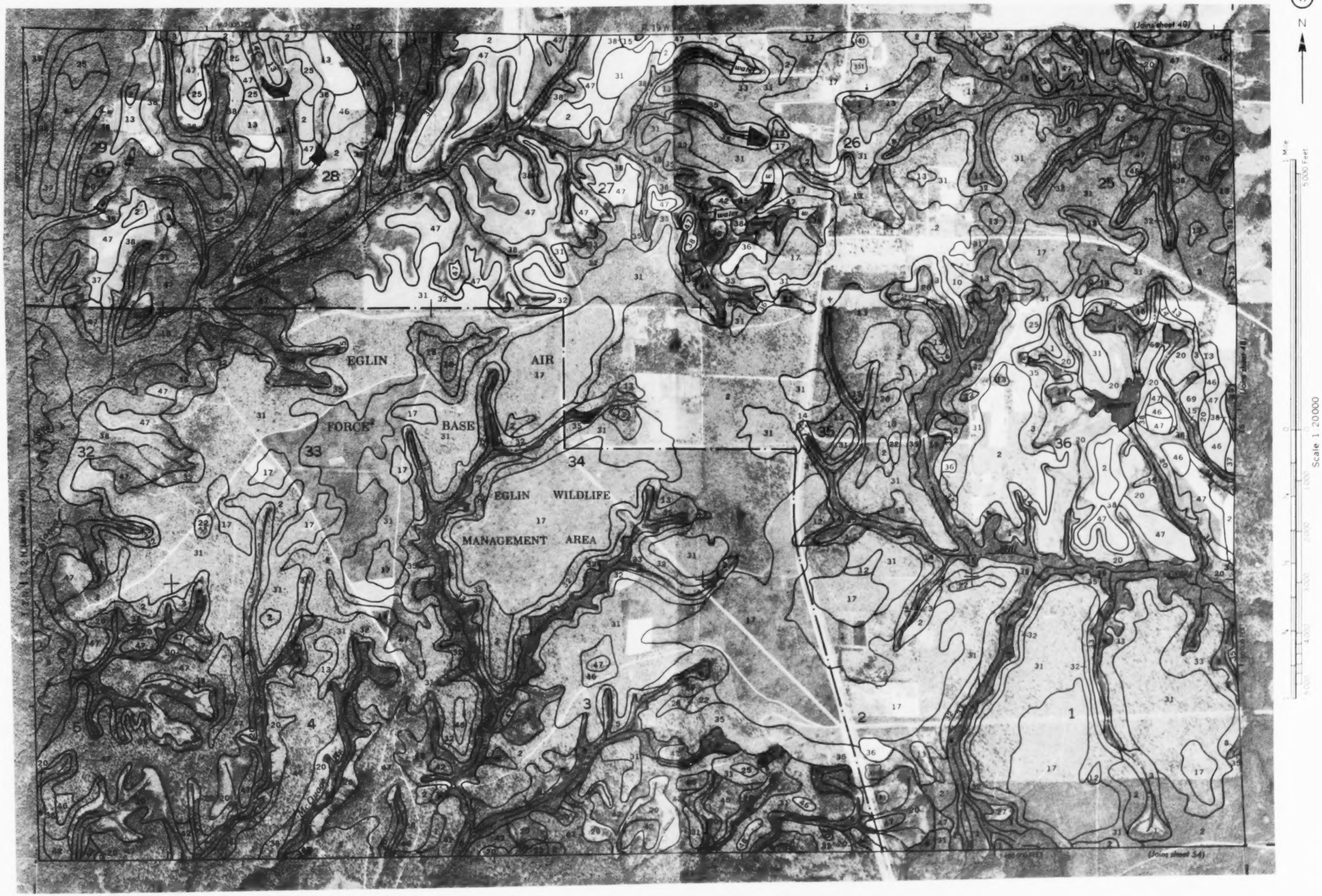
WALTON COUNTY FLORIDA — SHEET NUMBER 44

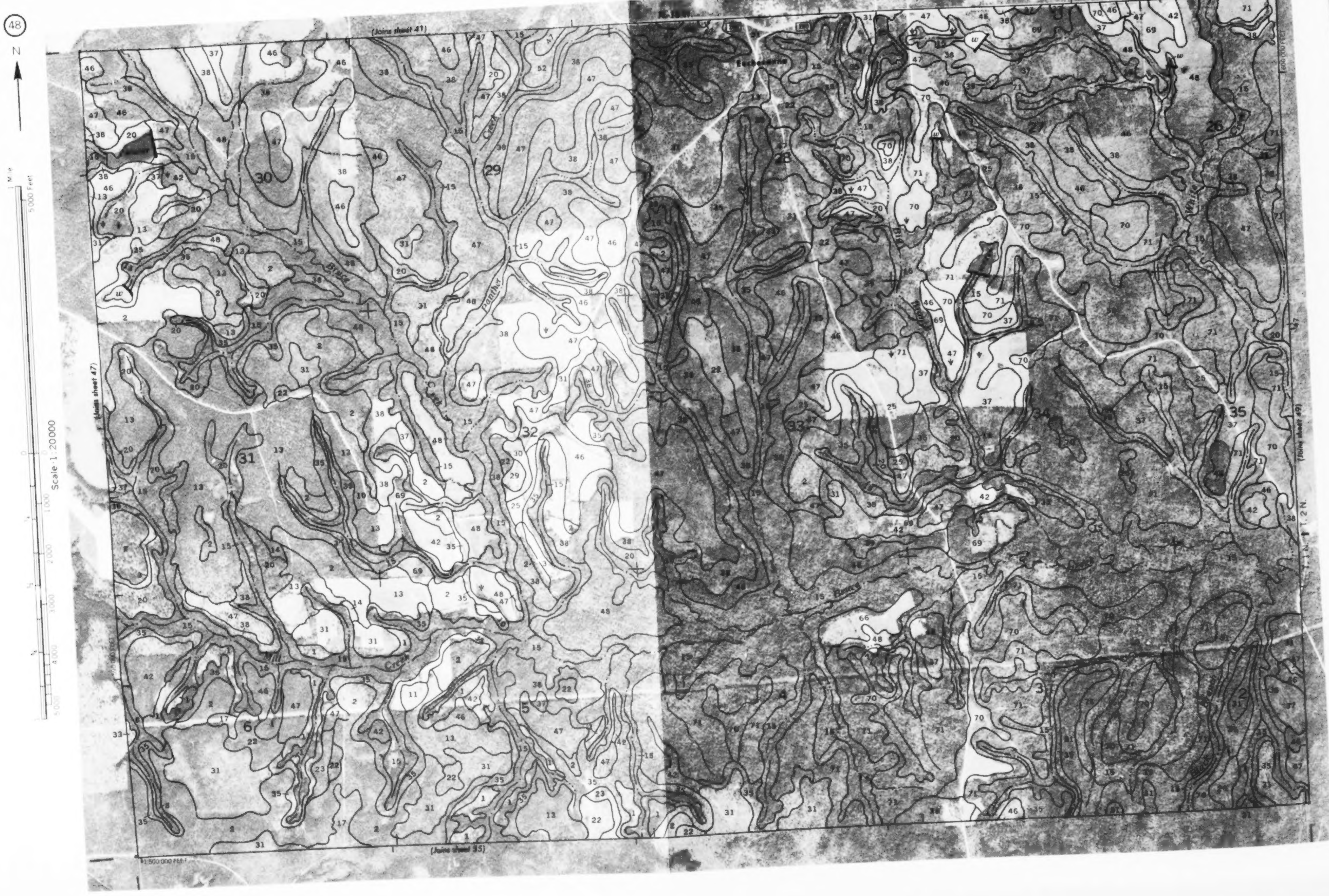

N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 37)
(Joins sheet 51)
(Joins sheet 45)
R. 21 W.
T. 1 N.
1 425 000 FEET
1 405 000 FEET
OKALOOSA COUNTY
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
EGLIN 27 WILDLIFE MANAGEMENT AREA
Exline Creek
Green Head Branch
Dogwood Head Branch
Bear Branch
Open Branch
26
27
28
29
30
31
32
33
34
35
2
3
4
5
6
1
4
8
16
17
18
19
31
32
33
34
35
36
42
47


(Joins sheet 38)
(Joins sheet 52)
(Joins sheet 44)
(Joins sheet 46)
EGLIN WILDLIFE MANAGEMENT AREA
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
Open
Wilson Pond
600 000 FEET
1 450 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000

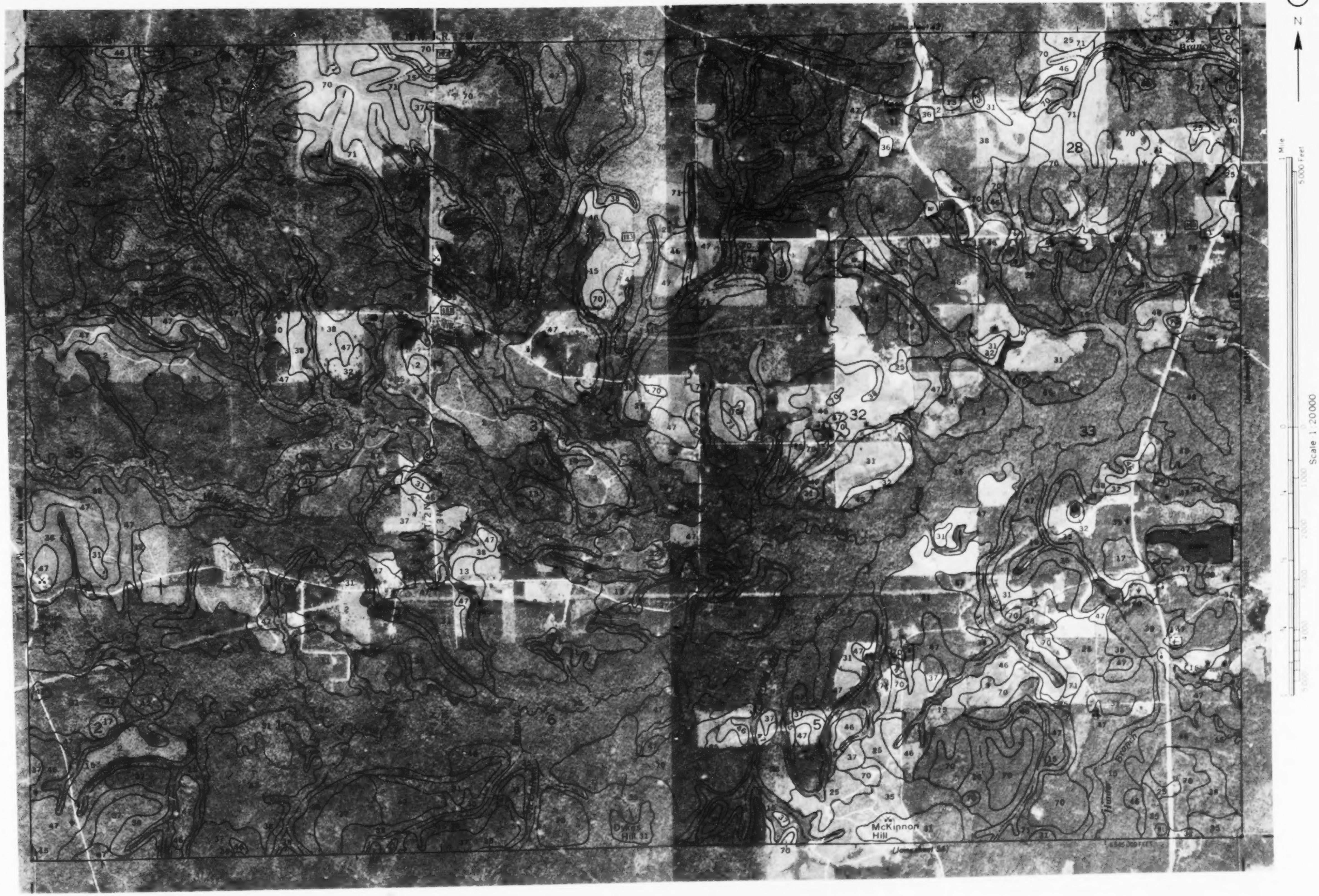

46
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 39)
(Joins sheet 45)
(Joins sheet 53)
R. 20 W.
R. 19 W.
1 475 000 FEET
1 455 000 FEET
1 550 000 FEET
Landing Strip
EGLIN
AIR
FORCE
BASE
EGLIN AIR FORCE BASE
WILDLIFE MANAGEMENT AREA
25
26
27
28
29
30
31
32
33
34
35
36
1
2
3
5
6
Little Alaqua
Alaqua Creek
Bruce Creek
Mill Creek
Beaver Pond
New Home

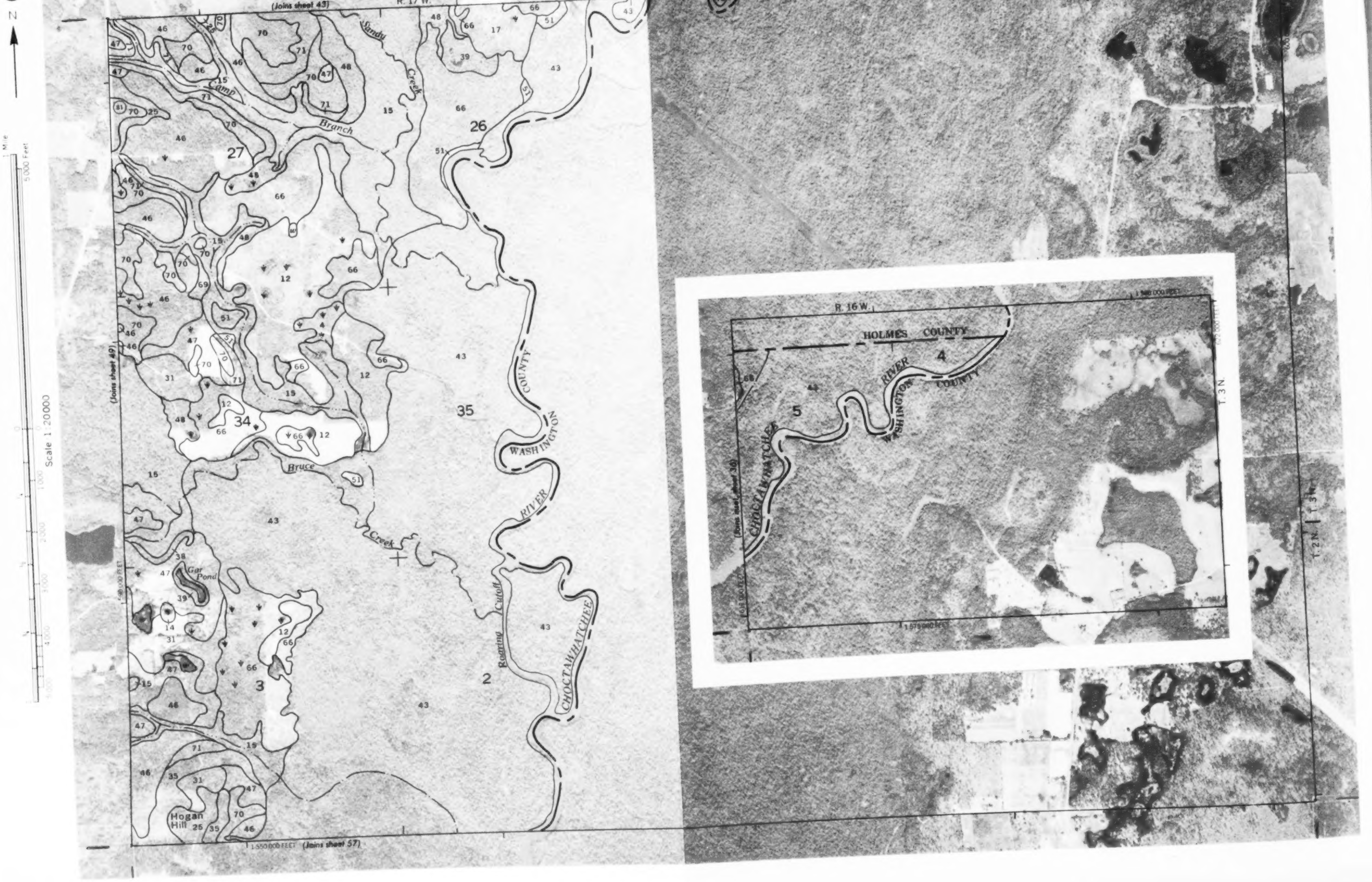
U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.

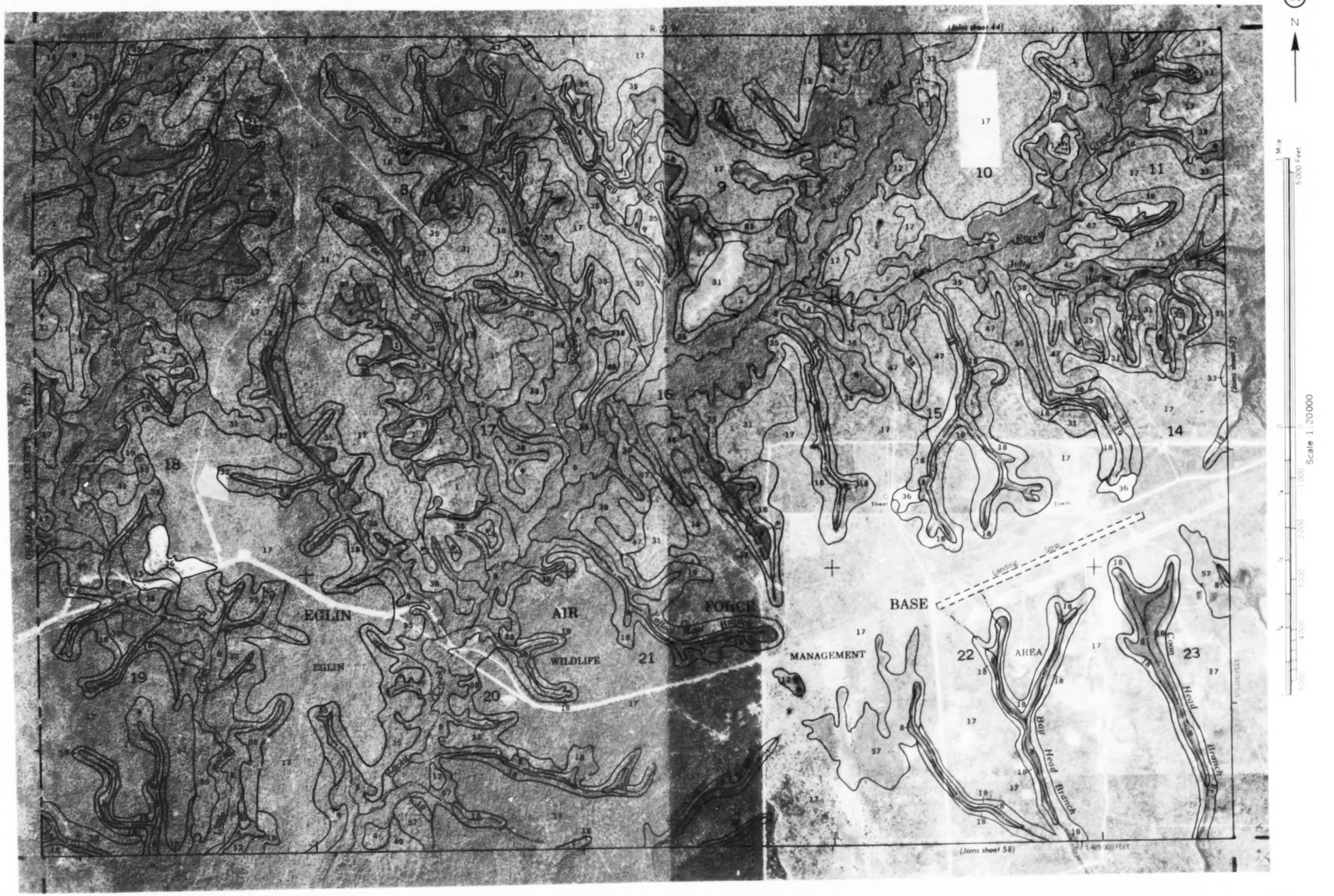

N
R 19 W
(Joins sheet 40)
(Joins sheet 54)
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
28
29
27
26
25
32
33
34
35
36
5
4
3
2
1
water
Scale 1:20 000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000

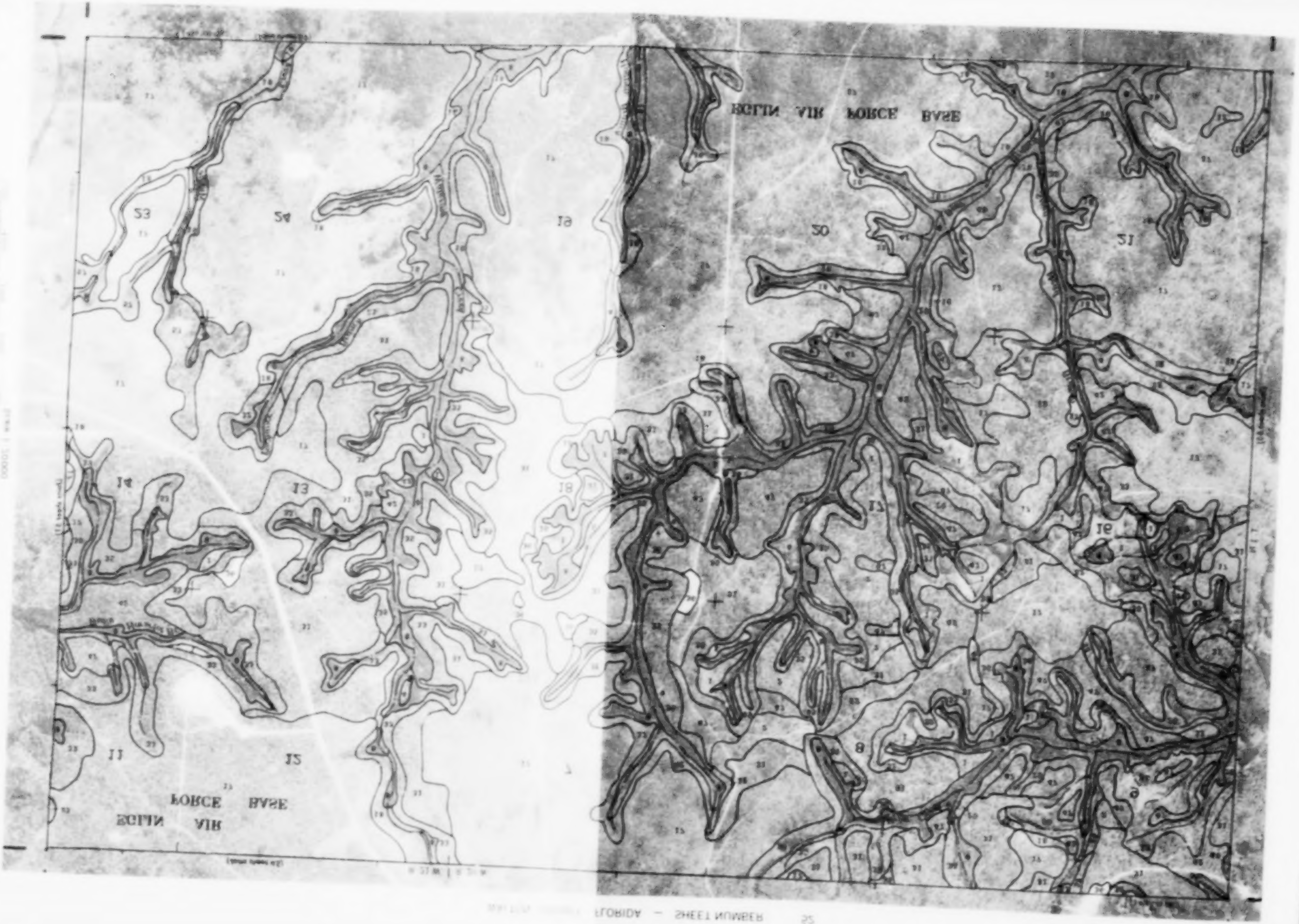


(48)
N
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 41)
(Joins sheet 47)
(Joins sheet 49)
(Joins sheet 35)
1 520 000 FEET
500 000 FEET
1 500 000 FEET
T. 1 N.
T. 2 N.
Eucheeanna
Bruce
Panther Creek
Creek
White
Bruce Creek
26
27
28
29
30
31
32
33
34
35
2
3
4
5
6

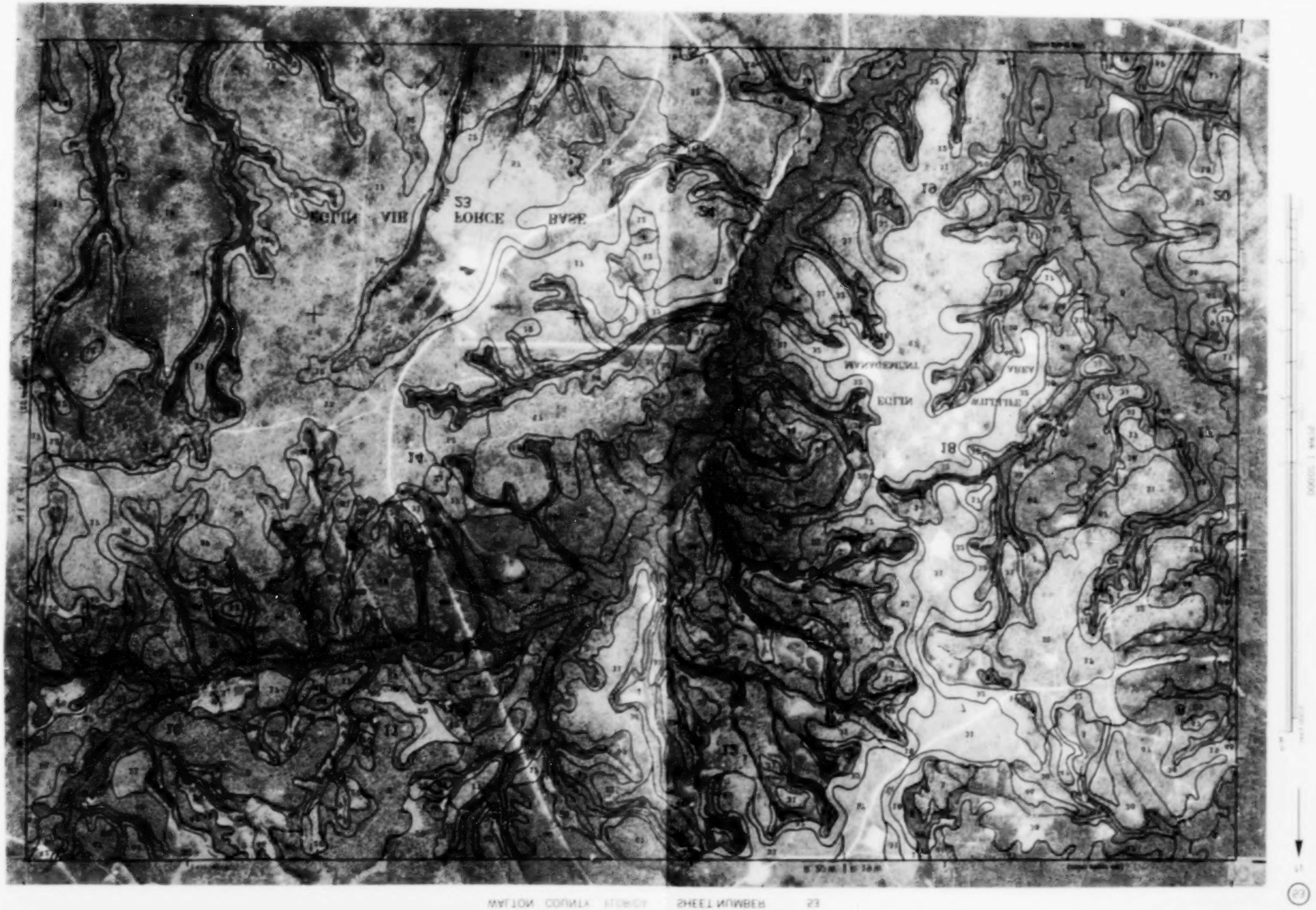

N
1 Mile
5000 Feet
Scale 1:20000
McKinnon Hill
Dykes Hill
Hawk Branch
28
32
33
35
5
6


N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 43)
R. 17 W.
(Joins sheet 49)
(Joins sheet 57)
1 550 000 FEET
1 570 000 FEET
Camp Branch
Sandy Creek
Bruce Creek
Roaring Cutoff
Gar Pond
Hogan Hill
WASHINGTON COUNTY
CHOCTAWHATCHEE RIVER
27
26
34
35
3
2
R. 16 W.
HOLMES COUNTY
WASHINGTON COUNTY
CHOCTAWHATCHEE RIVER
4
5
T. 3 N.
T. 2 N.
(Joins inset, sheet 50)
1 580 000 FEET

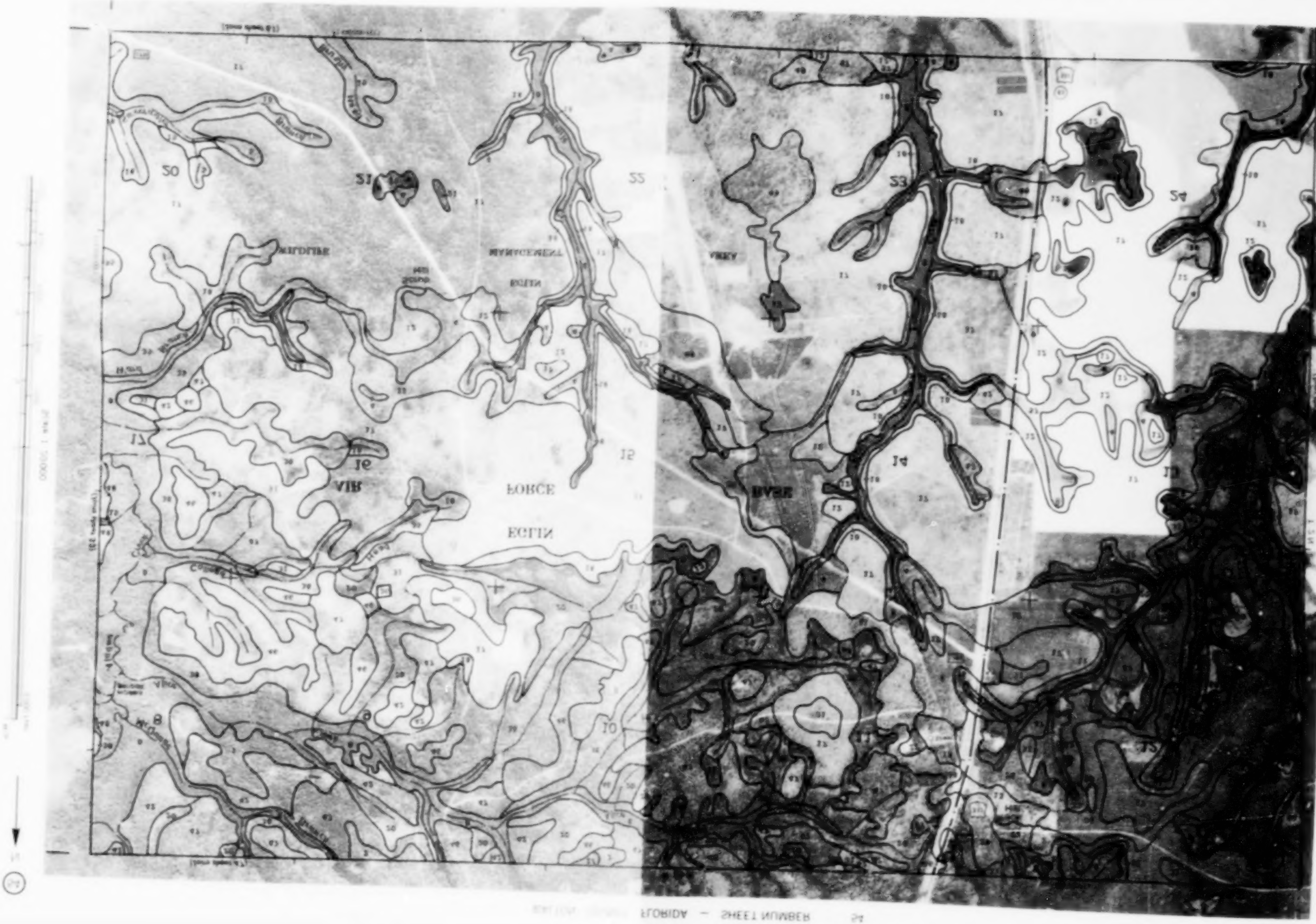

N
R. 21 W.
(Joins sheet 44)
(Joins sheet 52)
(Joins sheet 58)
1 425 000 FEET
OKALOOSA COUNTY
EGLIN
AIR
FORCE
BASE
EGLIN
WILDLIFE
MANAGEMENT
AREA
Landing Strip
Tower
Tower
Bay Head Branch
Coon Head Branch
1 Mile
5 000 Feet
Scale 1:20000


EGLIN AIR FORCE BASE
23
24
19
20
21
14
13
18
17
16
11
12
7
8
9
EGLIN AIR FORCE BASE

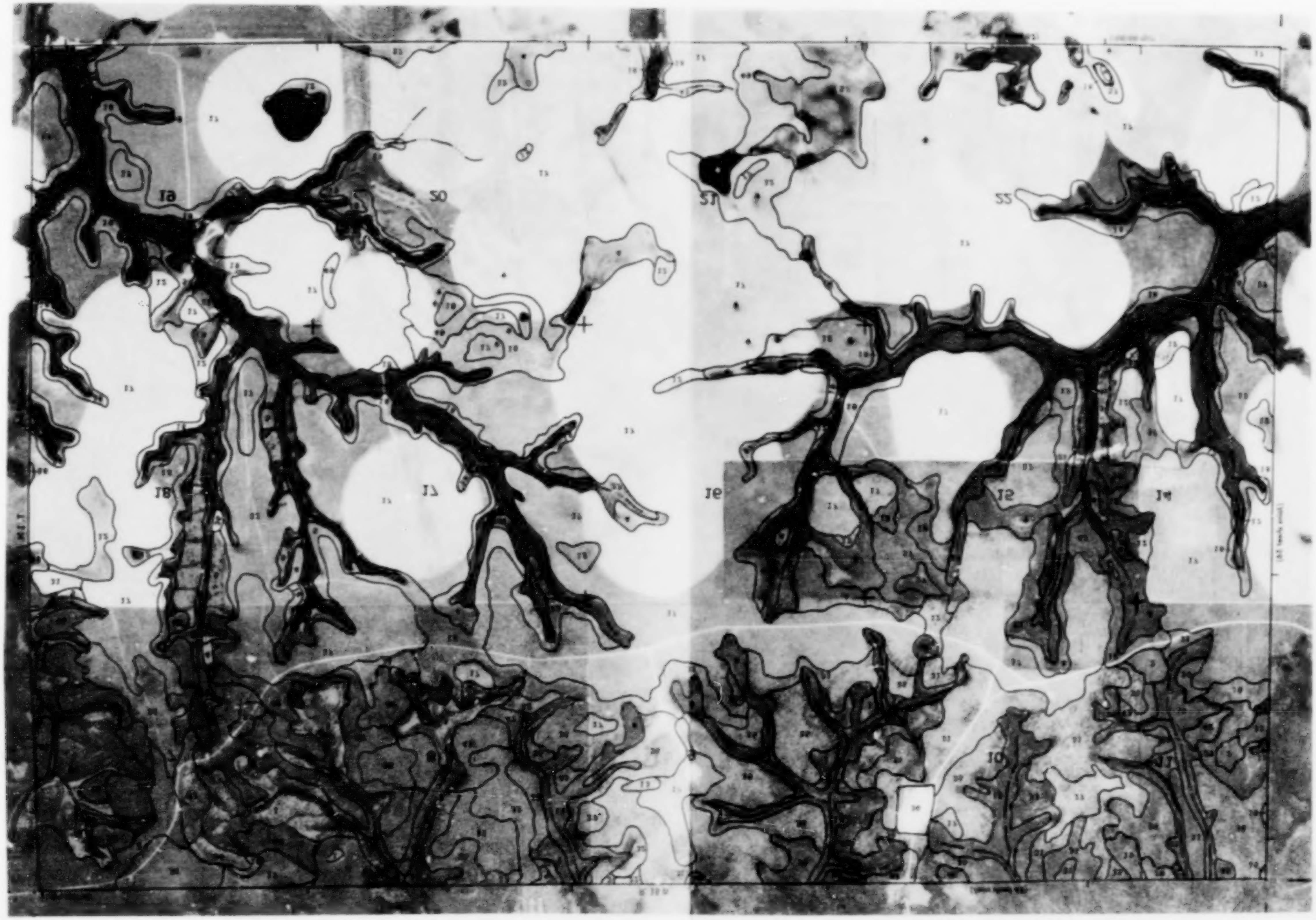
WALTON COUNTY, FLORIDA — SHEET NUMBER 52


EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
23
24
19
20
14
18
17
13
11
10
1:20000

WALTON COUNTY, FLORIDA SHEET NUMBER 53

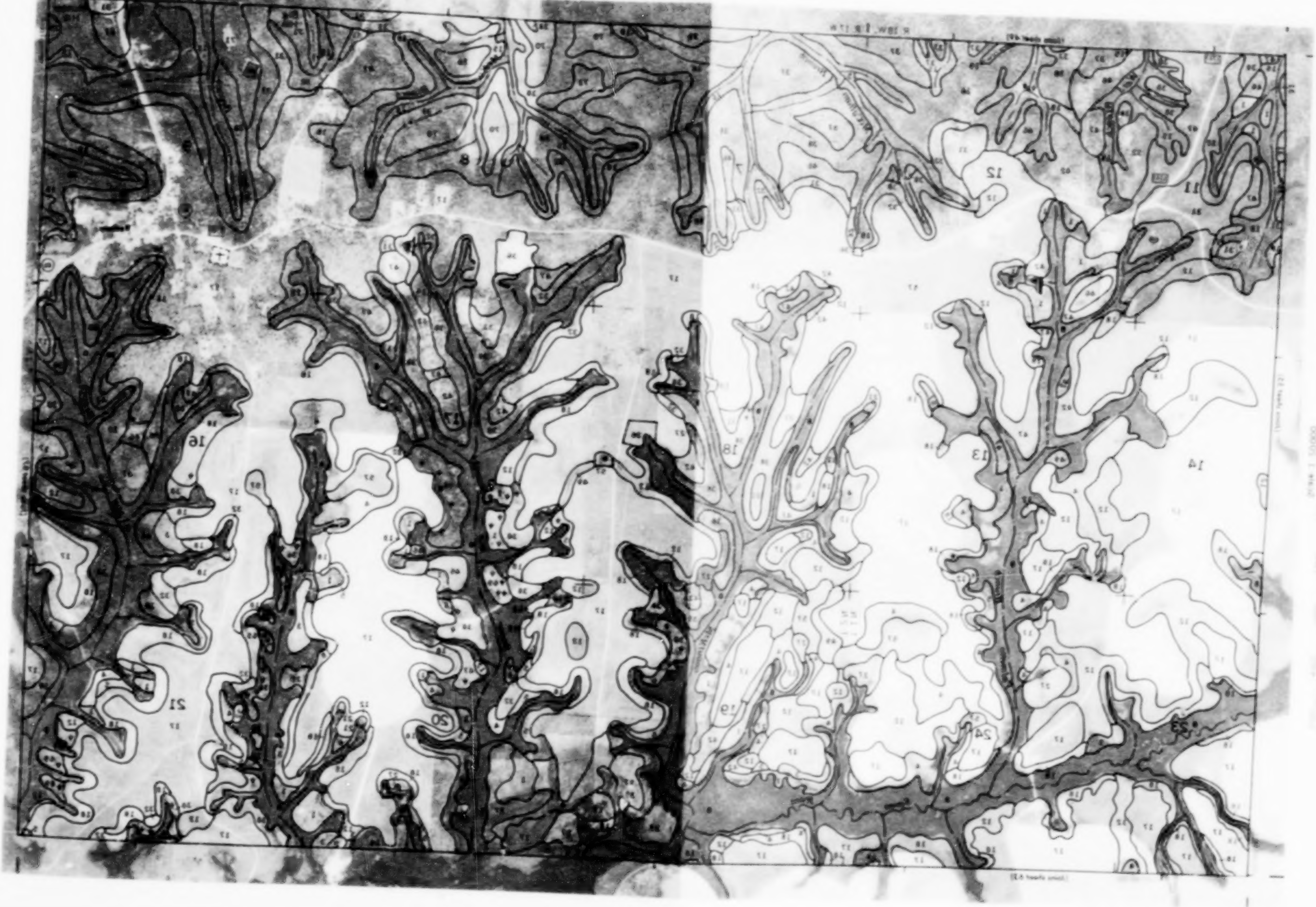

EGLIN
AIR
FORCE
BASE
EGLIN
WILDLIFE
MANAGEMENT
AREA
20
21
22
23
24
17
16
15
14
13
8
9
10
12
Scale 1:20000

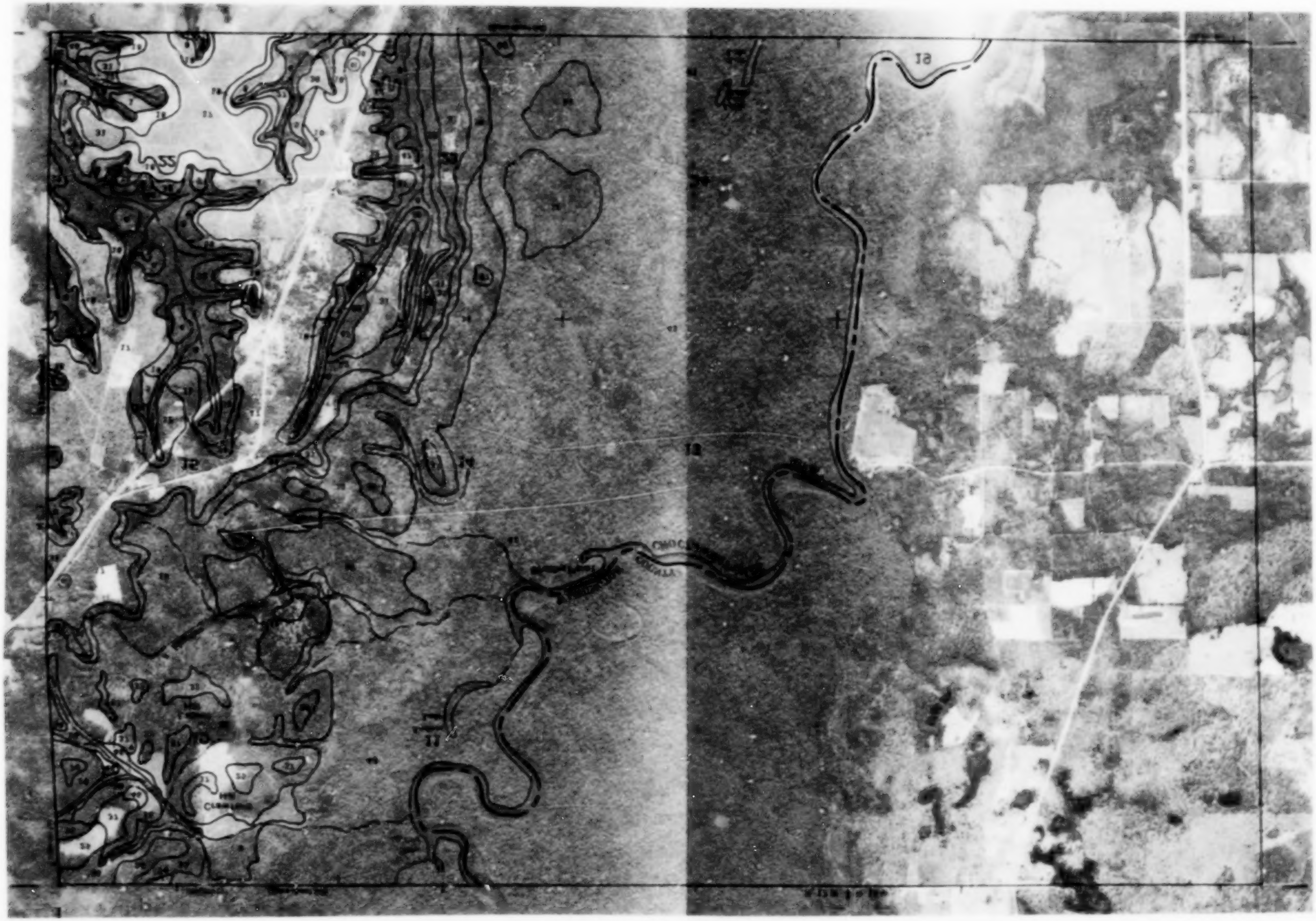
WALTON COUNTY, FLORIDA — SHEET NUMBER 54


19
20
21
22
18
17
16
15
14
10
11

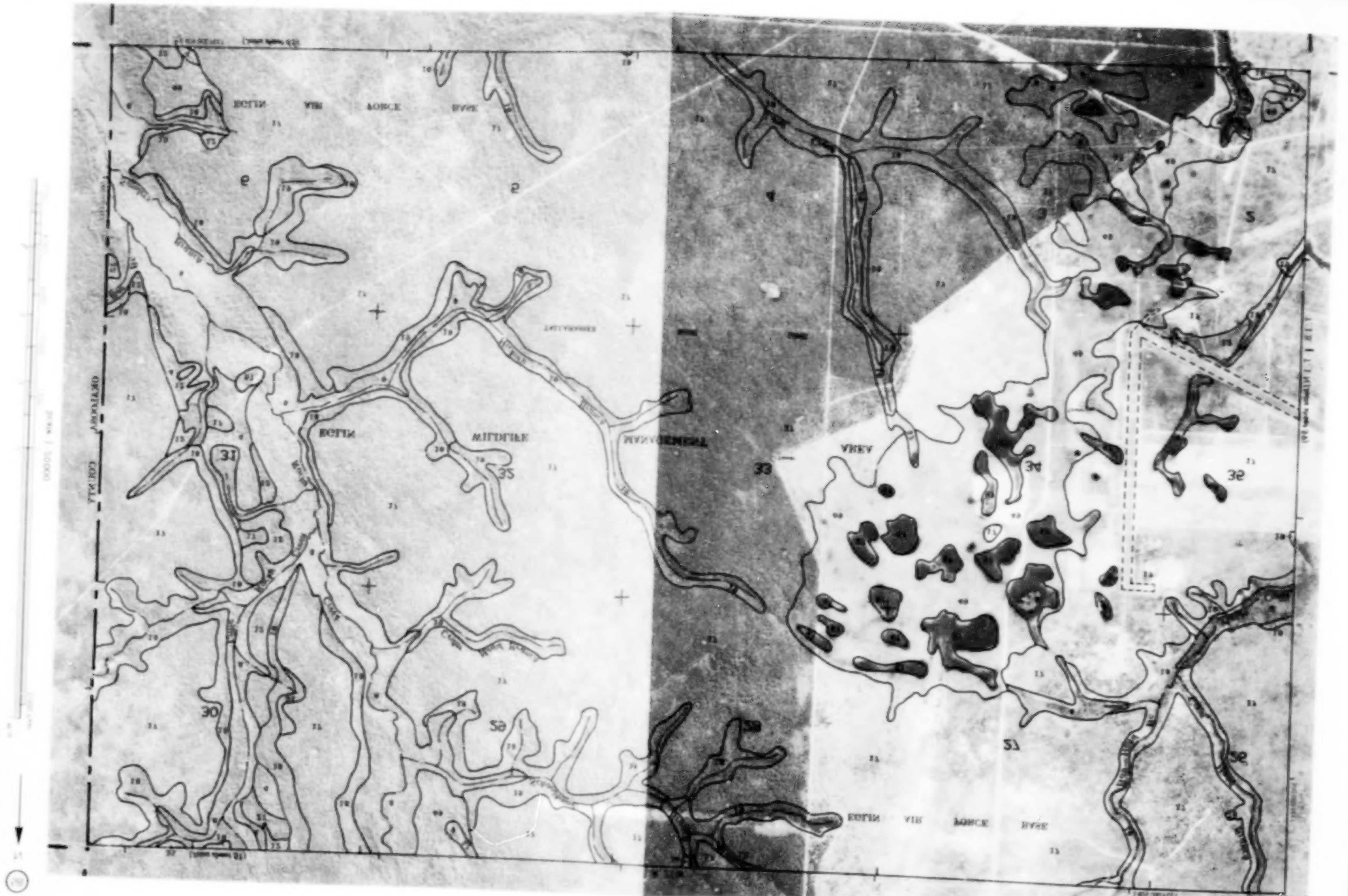
WALTON COUNTY FLORIDA SHEET NUMBER 55

WALTON COUNTY, FLORIDA — SHEET NUMBER 56


R 18W. | R 17 W.
8
11
12
13
14
16
17
18
19
20
21
22
23
24
Scale 1:20000

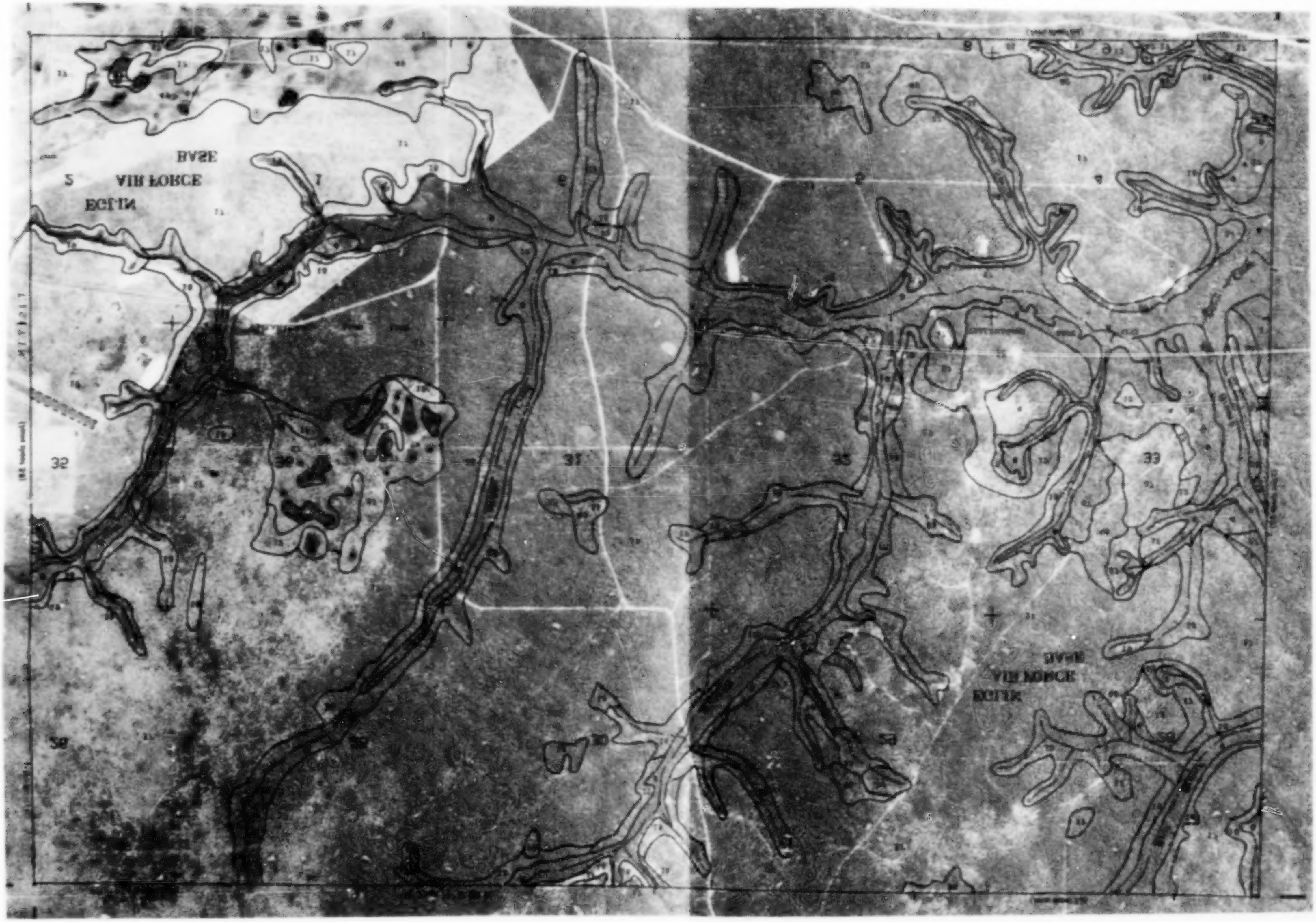

19
15
21
22
Choctawhatchee
COUNTY
N

WALTON COUNTY, FLORIDA — SHEET NUMBER 57

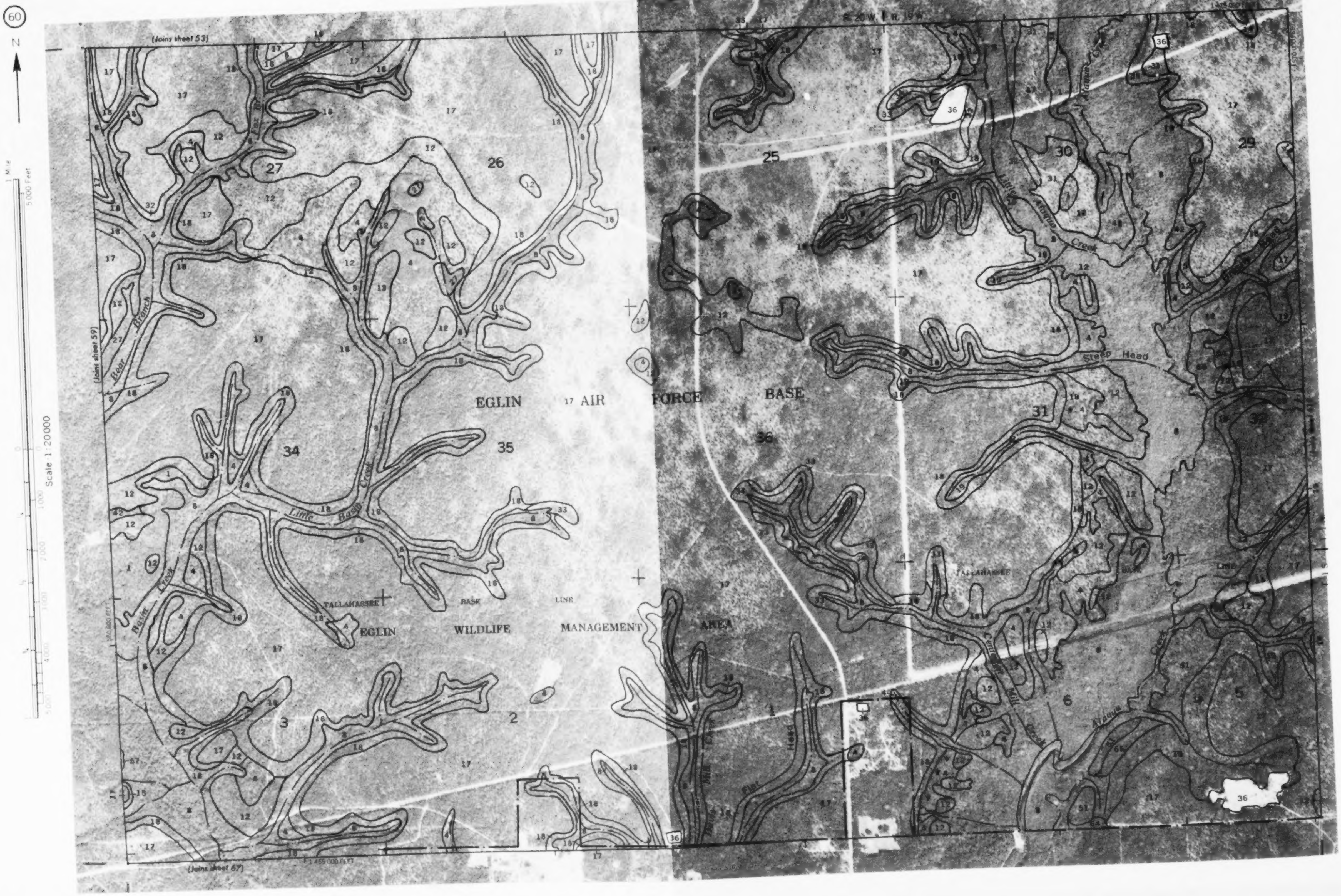


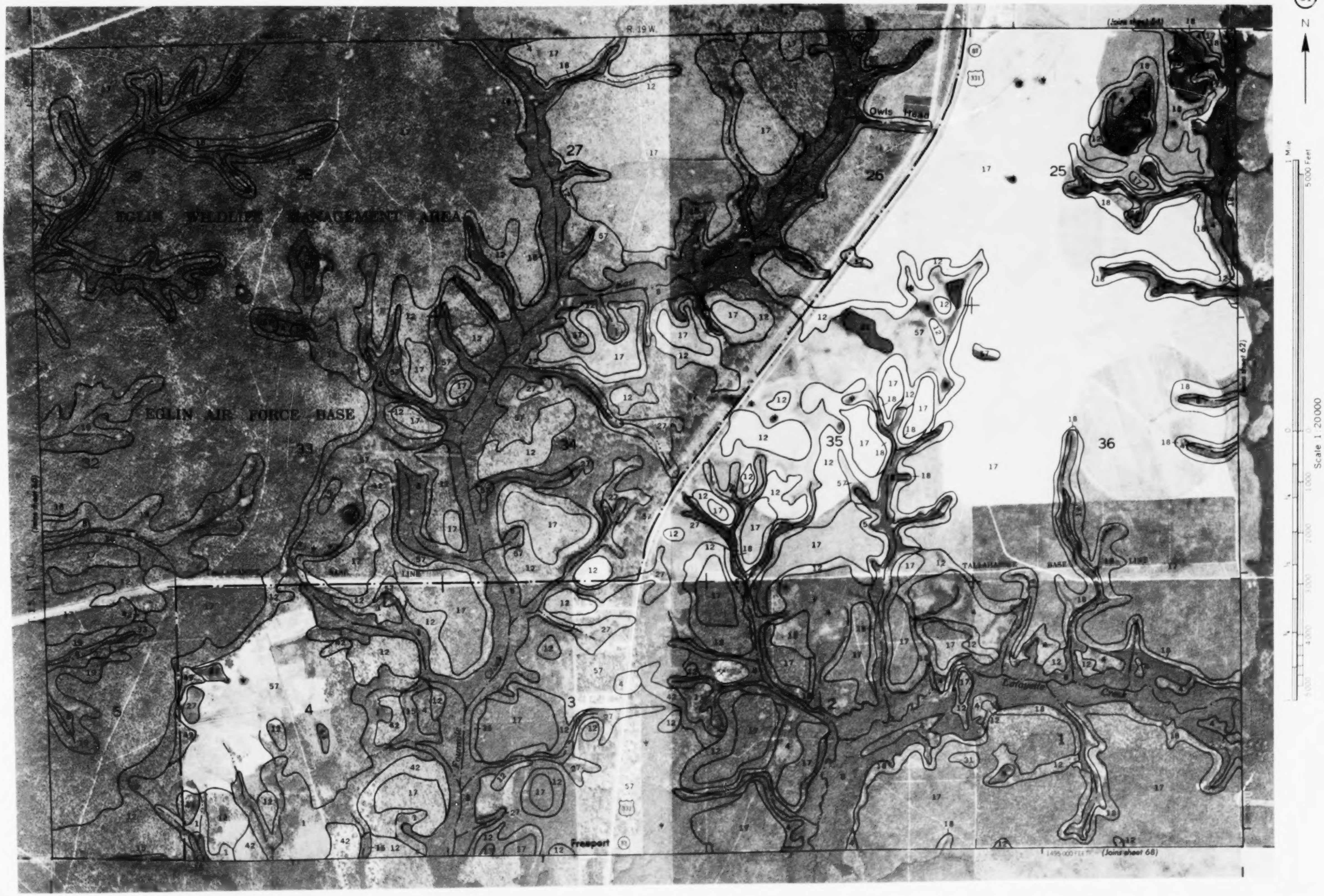
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
OKALOOSA COUNTY
2
4
5
6
27
29
30
31
32
33
34
35
36

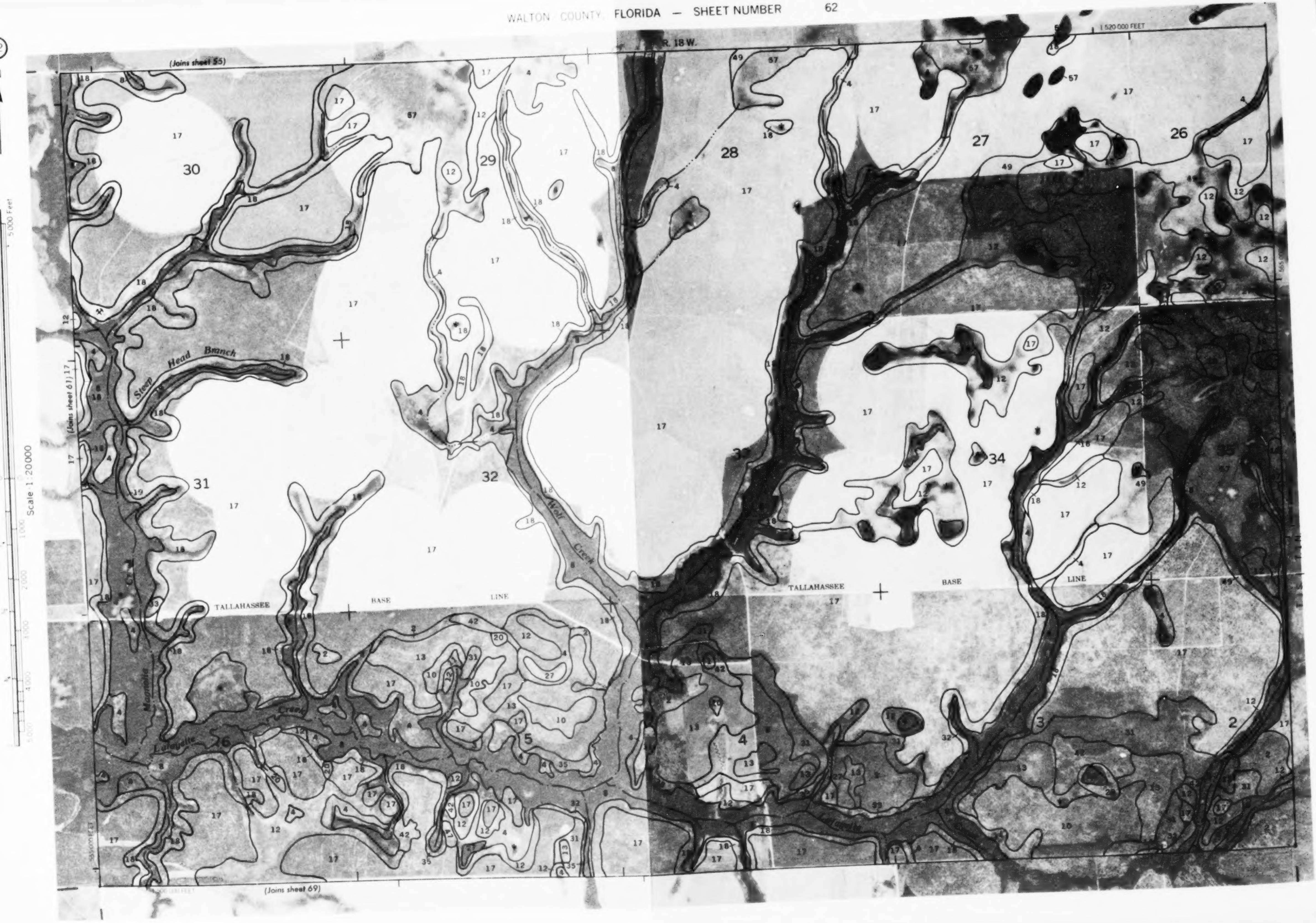
WALTON COUNTY, FLORIDA — SHEET NUMBER 58

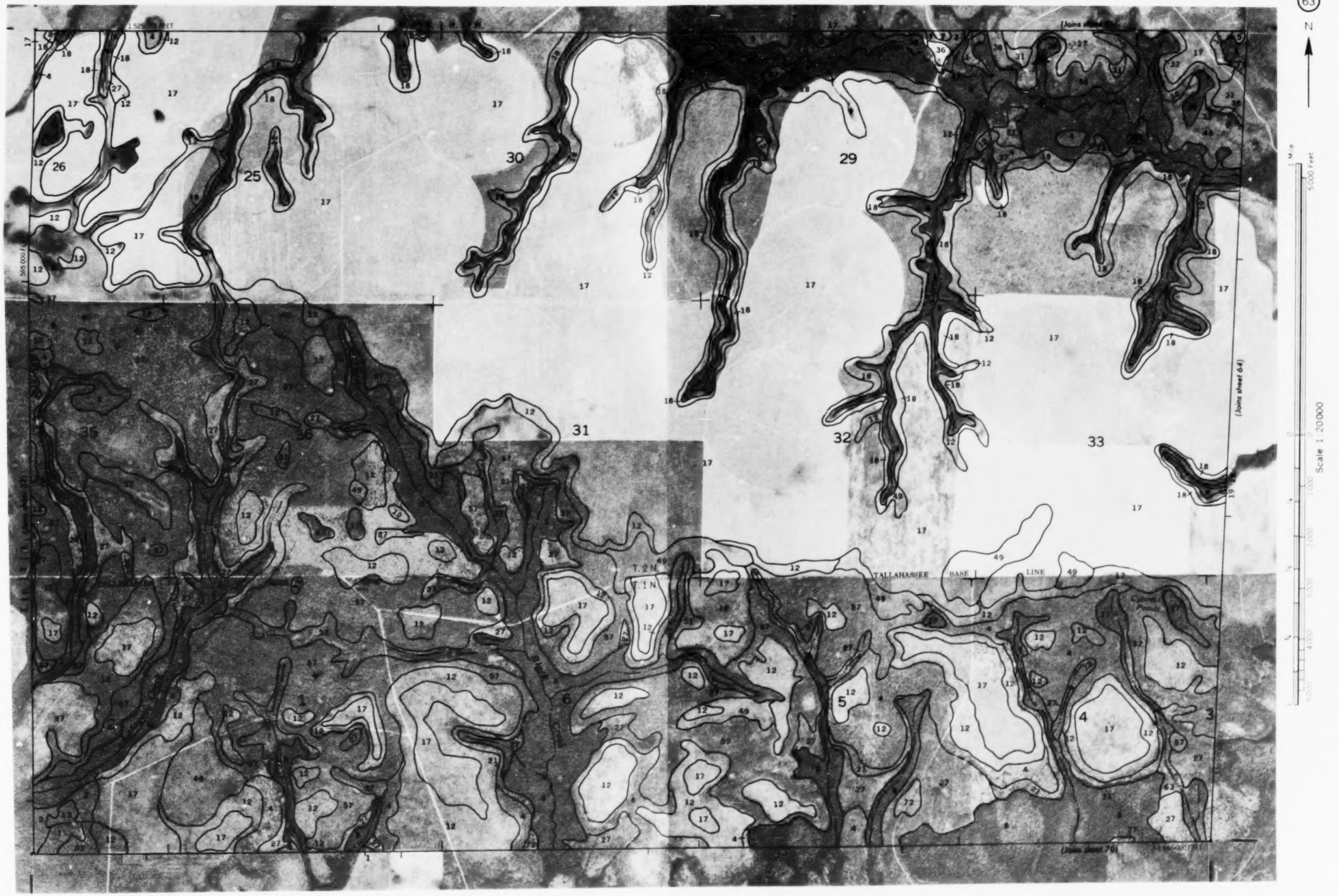

EGLIN
AIR FORCE
BASE
2
1
35
36
31
32
33
EGLIN
AIR FORCE
BASE
28
29
30
5
6
4
N

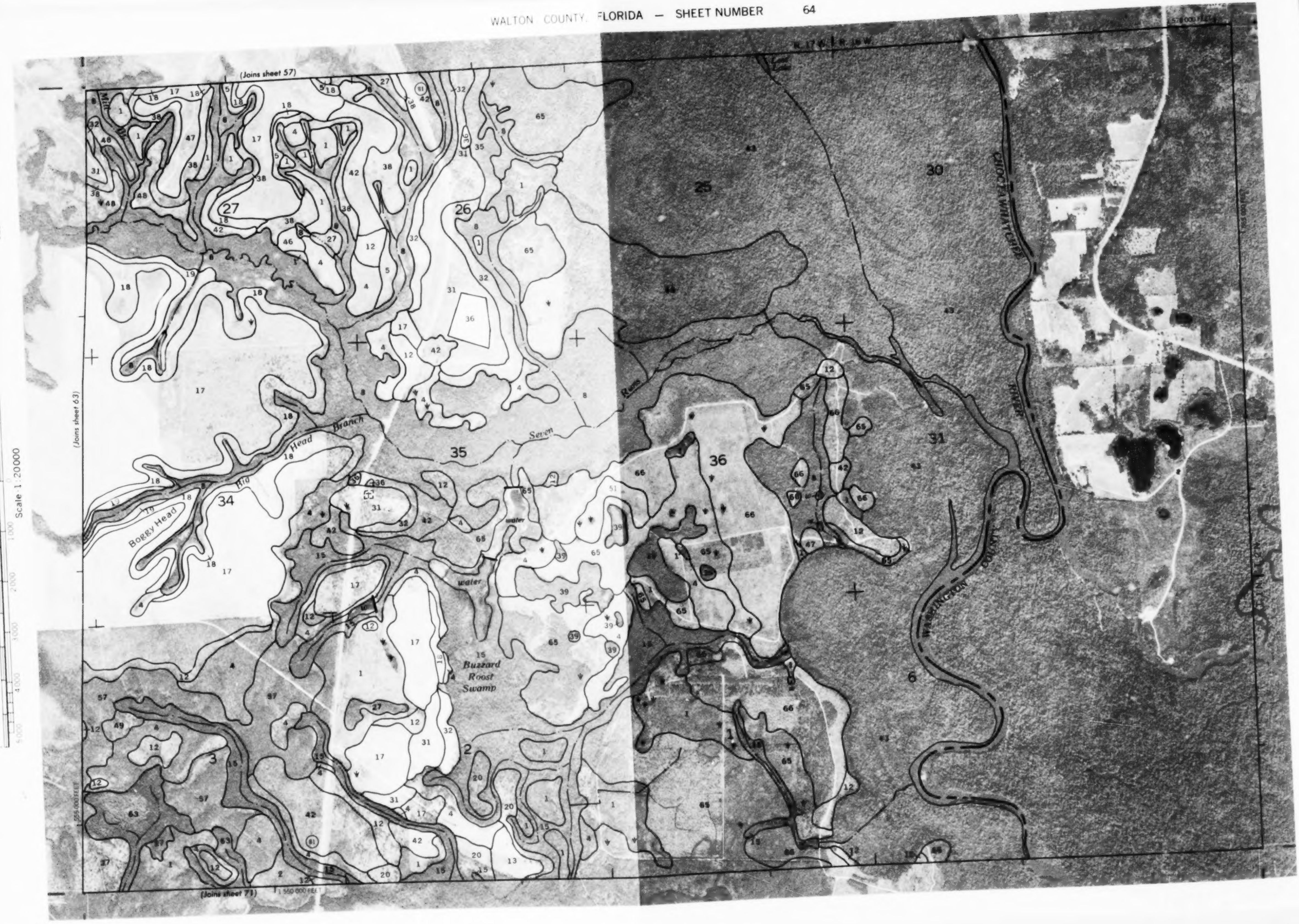
WALTON COUNTY, FLORIDA — SHEET NUMBER 59

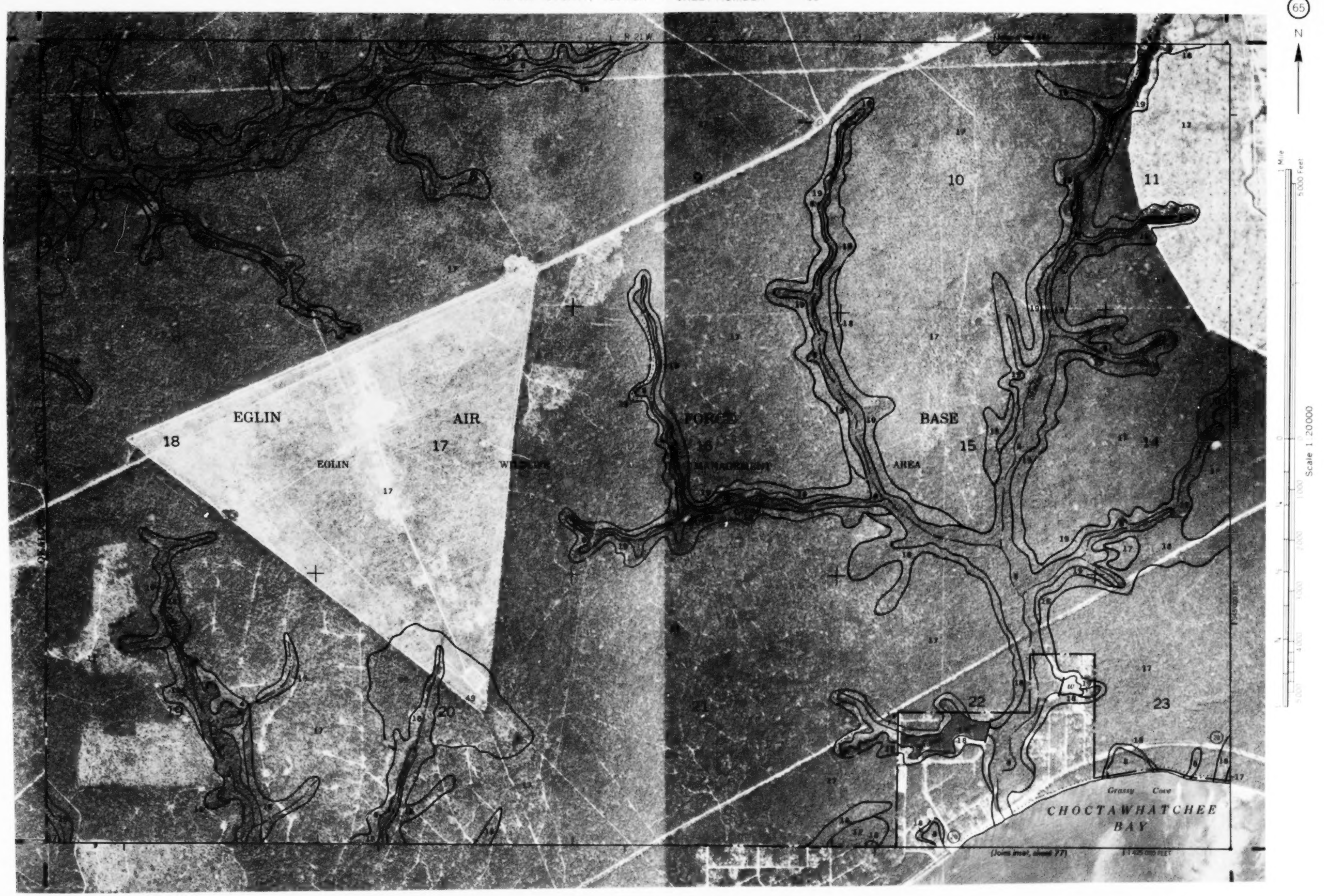

60
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 53)
(Joins sheet 59)
(Joins sheet 67)
R. 20 W.
R. 19 W.
27
26
25
30
29
34
35
36
31
32
3
2
1
6
5
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
TALLAHASSEE BASE LINE
Bear Branch
Little Basin Creek
Basin Creek
Little Alaqua Creek
Alaqua Creek
Steep Head
Mill Creek
36

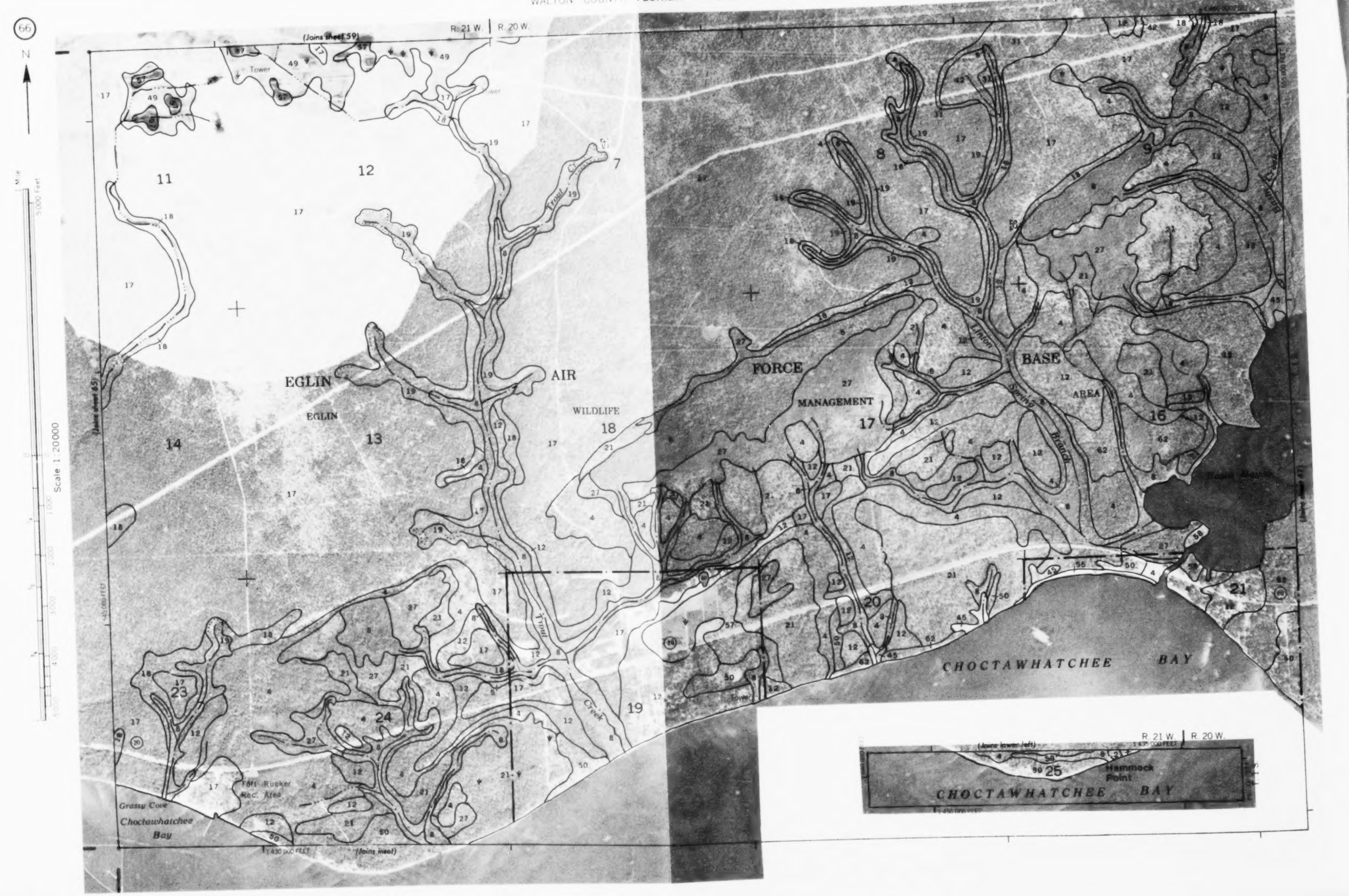

61
N
R. 19 W.
(Joins sheet 54)
Owls Head
EGLIN WILDLIFE MANAGEMENT AREA
EGLIN AIR FORCE BASE
TALLAHASSEE BASE LINE
Lafayette Creek
Freeport
331
(Joins sheet 62)
(Joins sheet 60)
(Joins sheet 68)
25
26
27
28
29
32
33
34
35
36
1
2
3
4
5
1 Mile
5000 Feet
Scale 1:20000


(Joins sheet 55)
R. 18 W.
1 520 000 FEET
(Joins sheet 61)
(Joins sheet 69)
Steep Head Branch
Wolf Creek
Magnolia Creek
Lafayette Creek
Lafayette
TALLAHASSEE BASE LINE
TALLAHASSEE BASE LINE
30
29
28
27
26
31
32
33
34
35
6
5
4
3
2
Scale 1:20000
5000 Feet

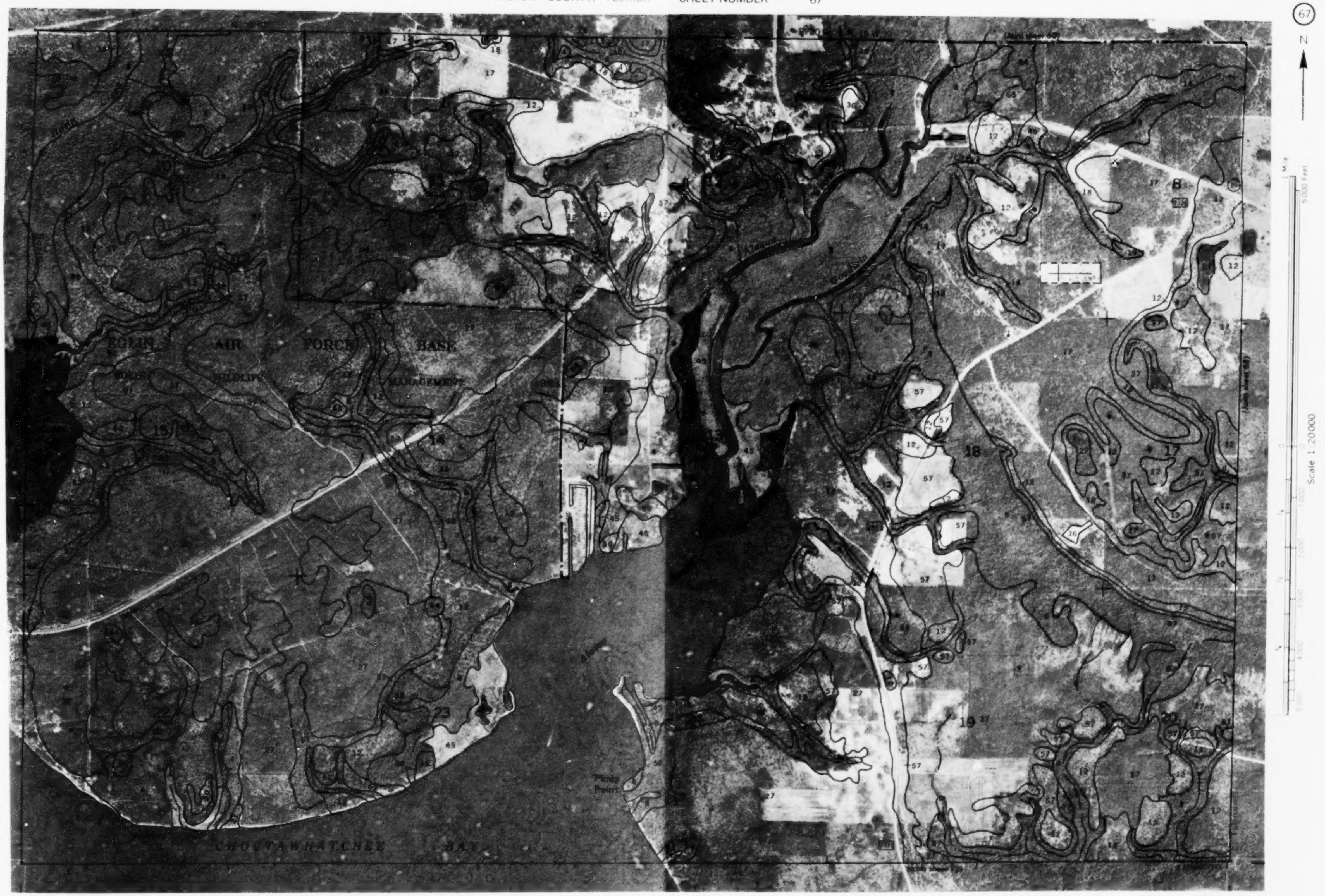

N
25
26
29
30
31
32
33
35
36
1
3
4
5
6
T.2N
T.1N
TALLAHASSEE BASE LINE
Cypress Ponds
(Joins sheet 64)
(Joins sheet 70)
565 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000


(Joins sheet 57)
(Joins sheet 63)
(Joins sheet 71)
Scale 1:20000
R. 17 W. | R. 16 W.
1 550 000 FEET
1 570 000 FEET
Mill
Boggy Head
Head Branch
Seven Runs
water
Buzzard Roost Swamp
CHOCTAWHATCHEE RIVER
WASHINGTON LAKE
25
26
27
30
31
34
35
36
65
6
17
18
1
2
3
4
8
12
15
42
57
63
66

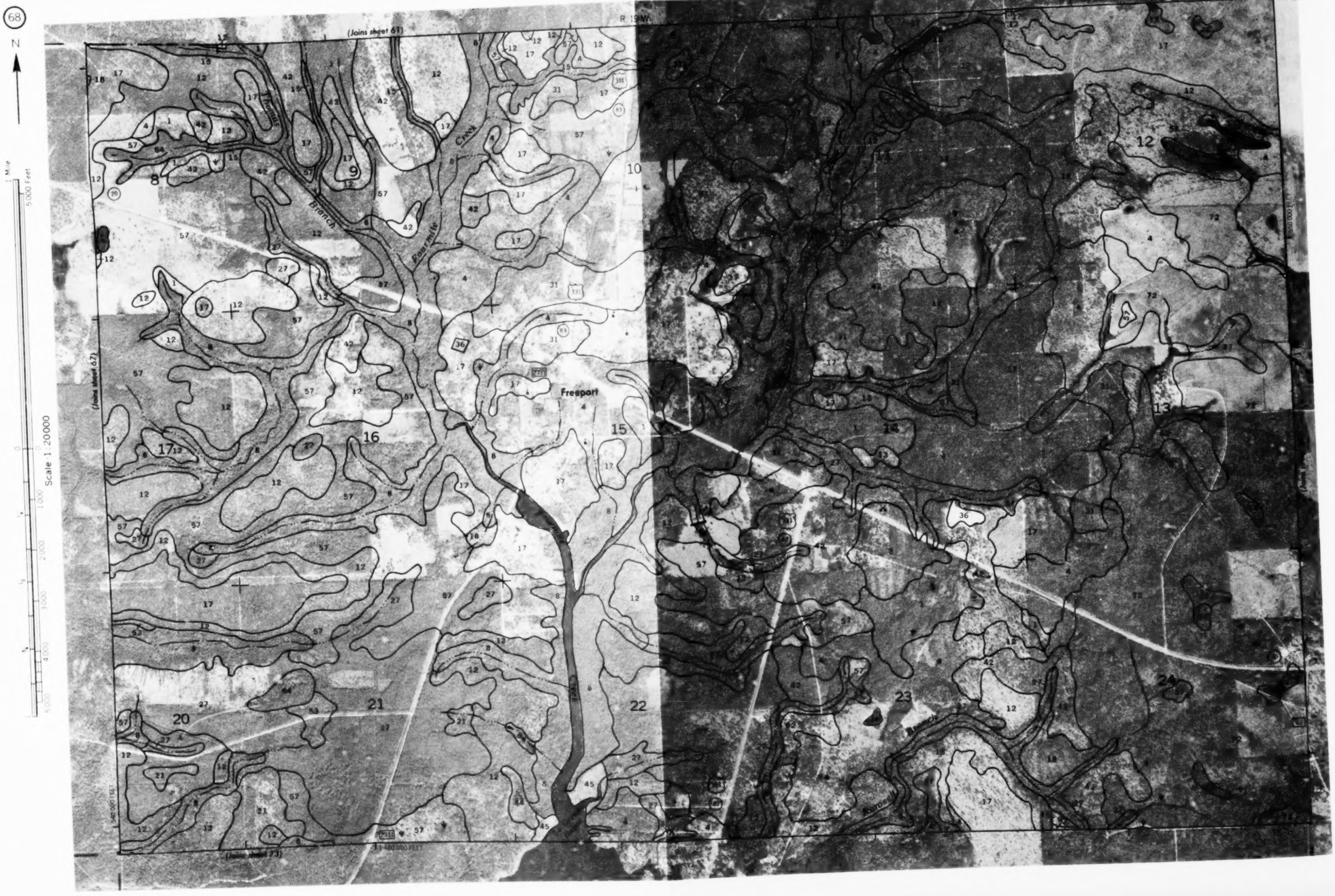

65
N
1 Mile
5000 Feet
Scale 1:20000
EGLIN AIR FORCE BASE
EGLIN WILDLIFE MANAGEMENT AREA
18
17
16
15
14
10
11
19
20
21
22
23
CHOCTAWHATCHEE BAY
Grassy Cove
(Joins inset, sheet 77)
1 425 000 FEET

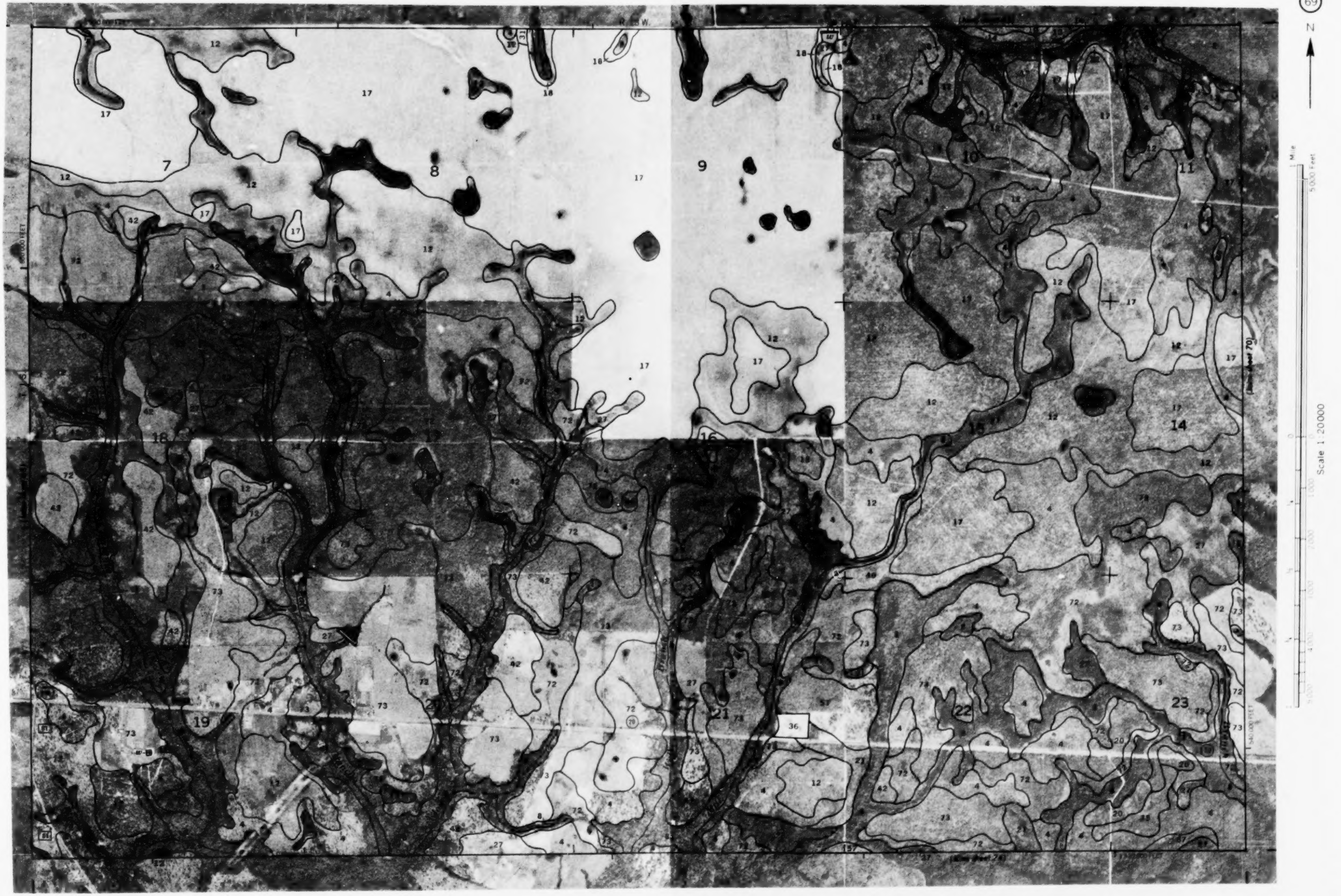

66
N
Scale 1:20000
1 Mile
5000 Feet
(Joins sheet 59)
R. 21 W.
R. 20 W.
Tower
EGLIN
AIR
FORCE
BASE
EGLIN
WILDLIFE
MANAGEMENT
AREA
Trout Creek
Linton
Spring Branch
Grassy Cove
Choctawhatchee Bay
Fort Rucker Rec. Area
CHOCTAWHATCHEE BAY
(Joins inset)
1 430 000 FEET
(Joins lower left)
Hammock Point
11
12
13
14
7
16
17
18
19
20
21
23
24
25

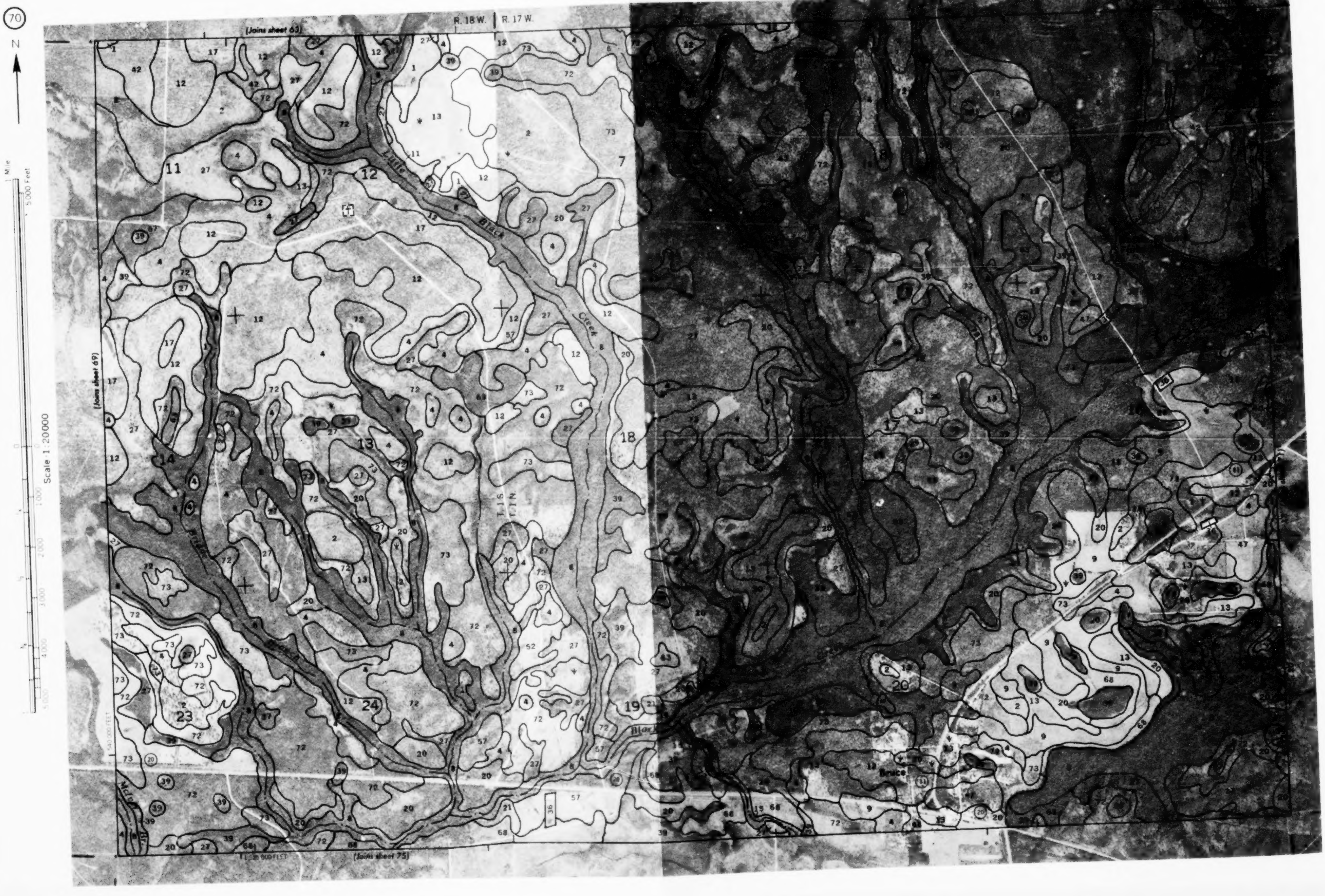
WALTON COUNTY, FLORIDA — SHEET NUMBER 67


67
N
EGLIN AIR FORCE BASE
WILDLIFE MANAGEMENT
CHOCTAWHATCHEE BAY
Piney Point
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000

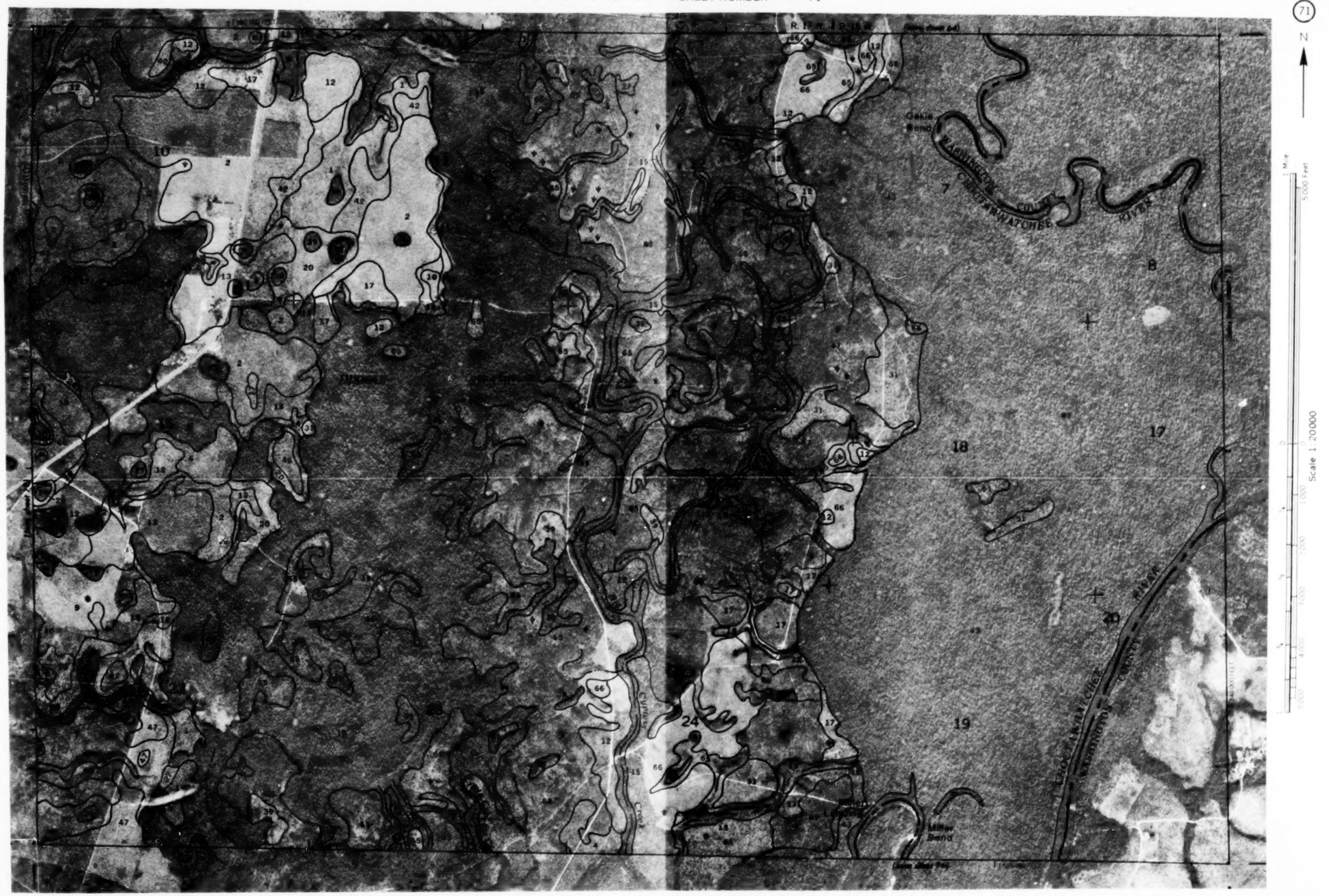
WALTON COUNTY, FLORIDA — SHEET NUMBER 68


68
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 61)
(Joins sheet 67)
(Joins sheet 73)
R. 19 W.
Freeport
Thomas
Branch
Fourmile
Creek
331
20
8
9
10
15
16
17
20
21
22
23
24
12
13
14
36
1 400 000 FEET
540 000 FEET

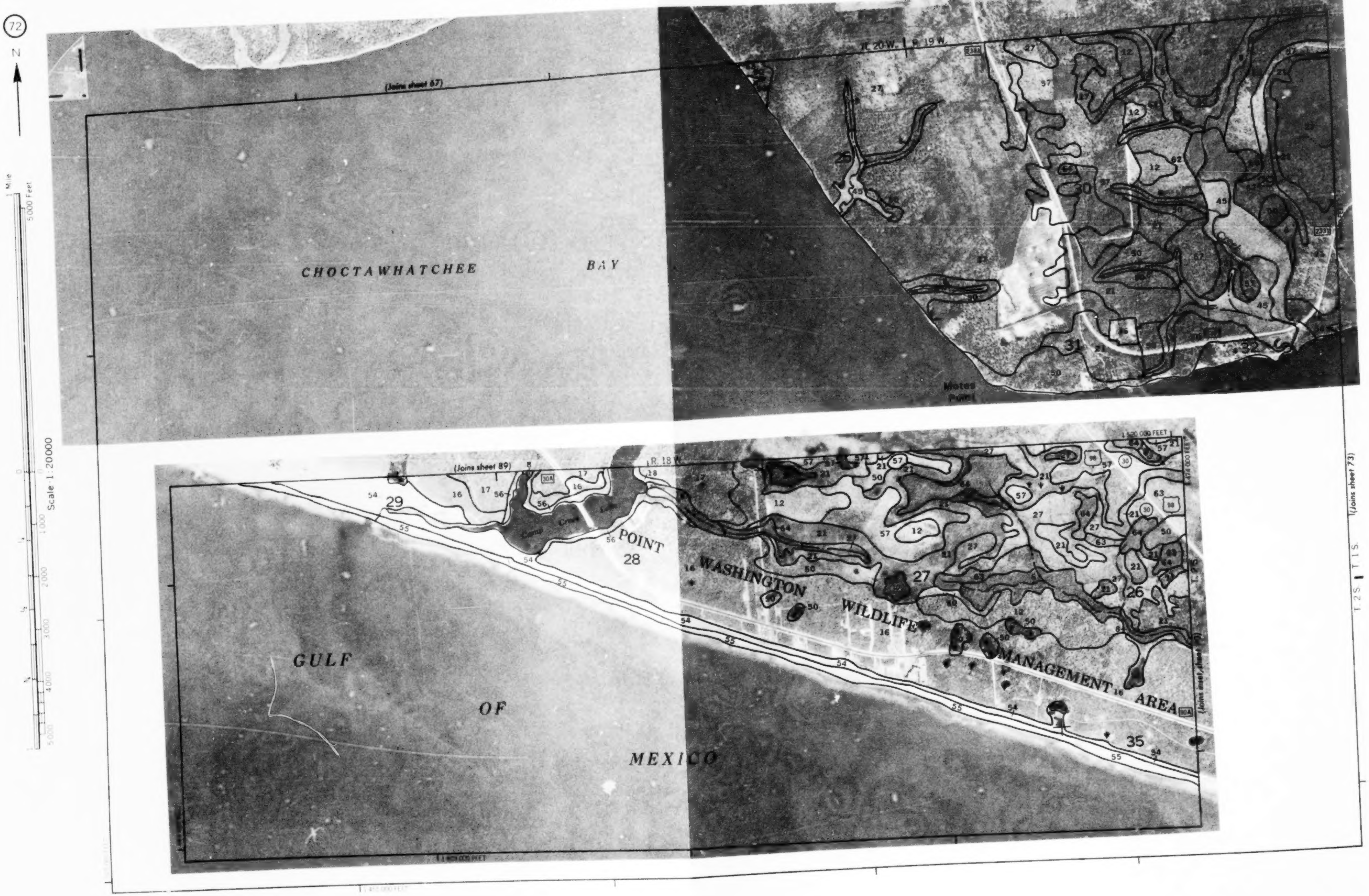

69
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
7
8
9
10
11
14
15
16
18
19
20
21
22
23
17
12
42
72
73
36
4
27
(Joins sheet 70)

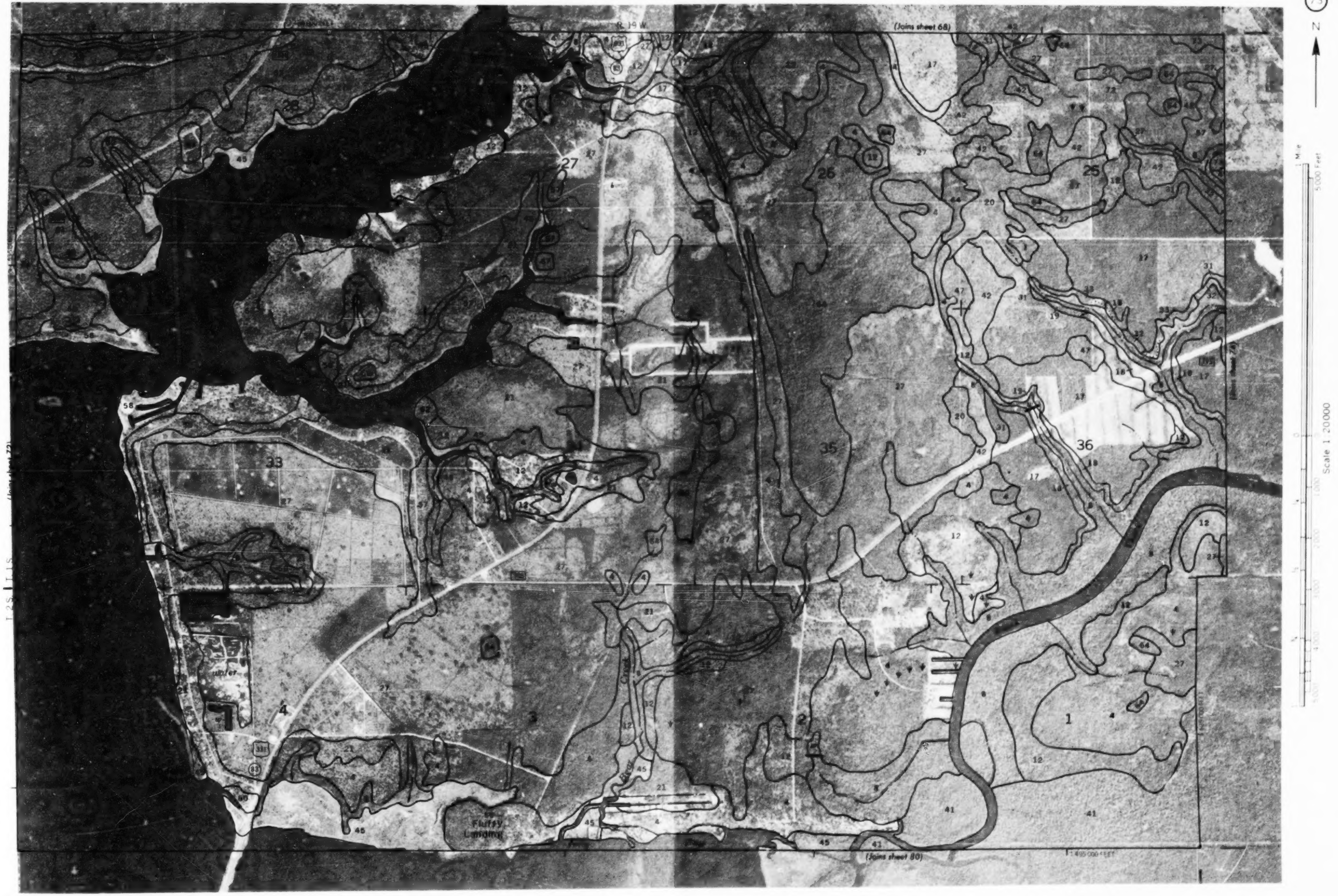

70
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 63)
R. 18 W.
R. 17 W.
(Joins sheet 69)
(Joins sheet 75)
T. 1 S.
T. 1 N.
Little Black Creek
Black Creek
Bruce
540 000 FEET
1 520 000 FEET

WALTON COUNTY, FLORIDA — SHEET NUMBER 71

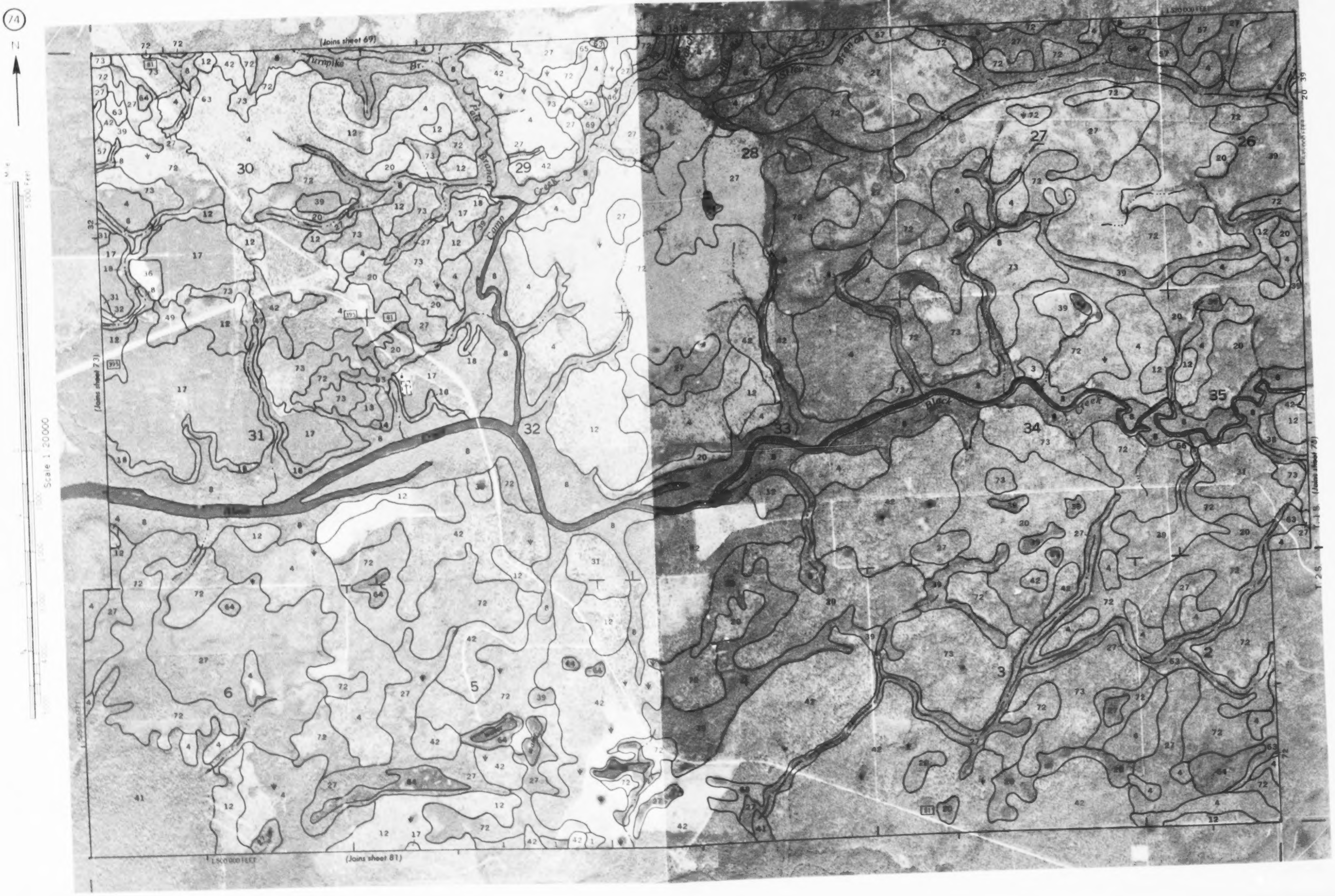


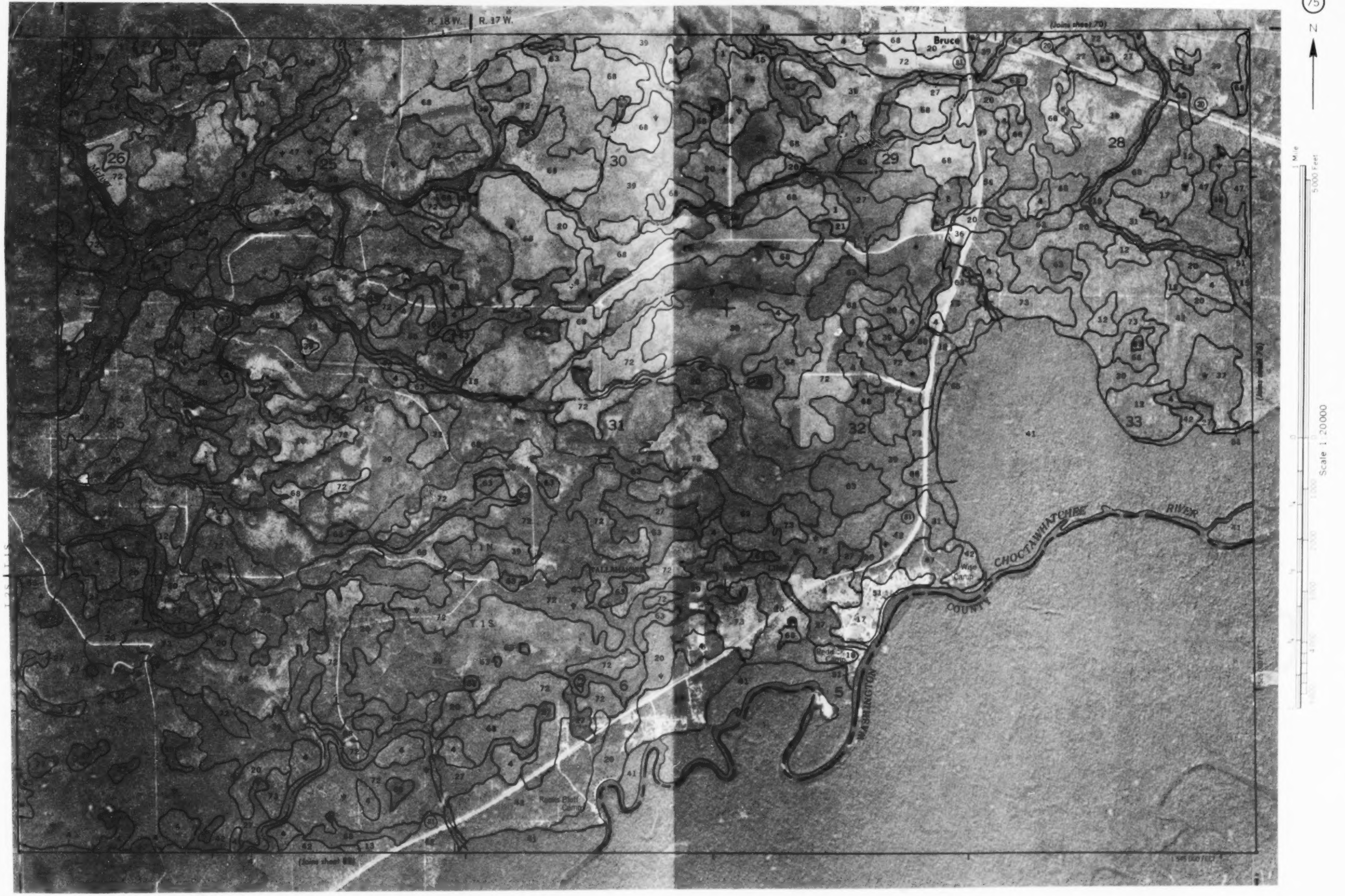
71
N
R. 17 W.
Oakie Bend
WASHINGTON COUNTY
CHOCTAWHATCHEE RIVER
Cypress Creek
Miller Bend
CHOCTAWHATCHEE RIVER
WASHINGTON COUNTY
7
8
10
17
18
19
20
24
1 Mile
5000 Feet
Scale 1:20000

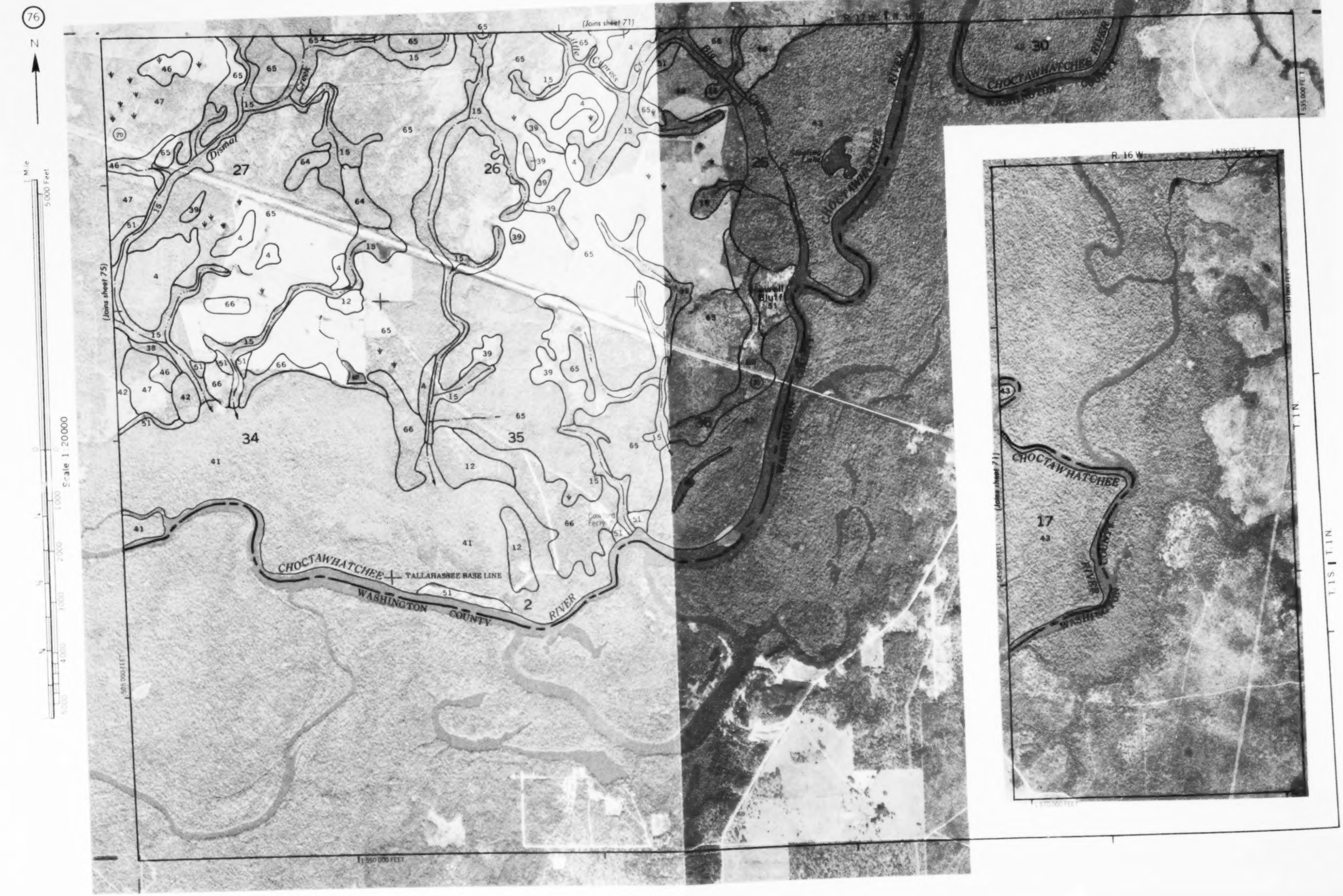

72
N
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 67)
CHOCTAWHATCHEE BAY
R. 20 W.
R. 19 W.
25
30
29
31
32
Moses Point
(Joins sheet 89)
R. 18 W.
Camp Creek Lake
POINT
28
WASHINGTON
WILDLIFE
MANAGEMENT
AREA
27
26
35
GULF
OF
MEXICO
(Joins sheet 73)
T. 2 S.
T. 1 S.
(Joins inset, sheet 90)
1 320 000 FEET
474 000 FEET
30A
98
30

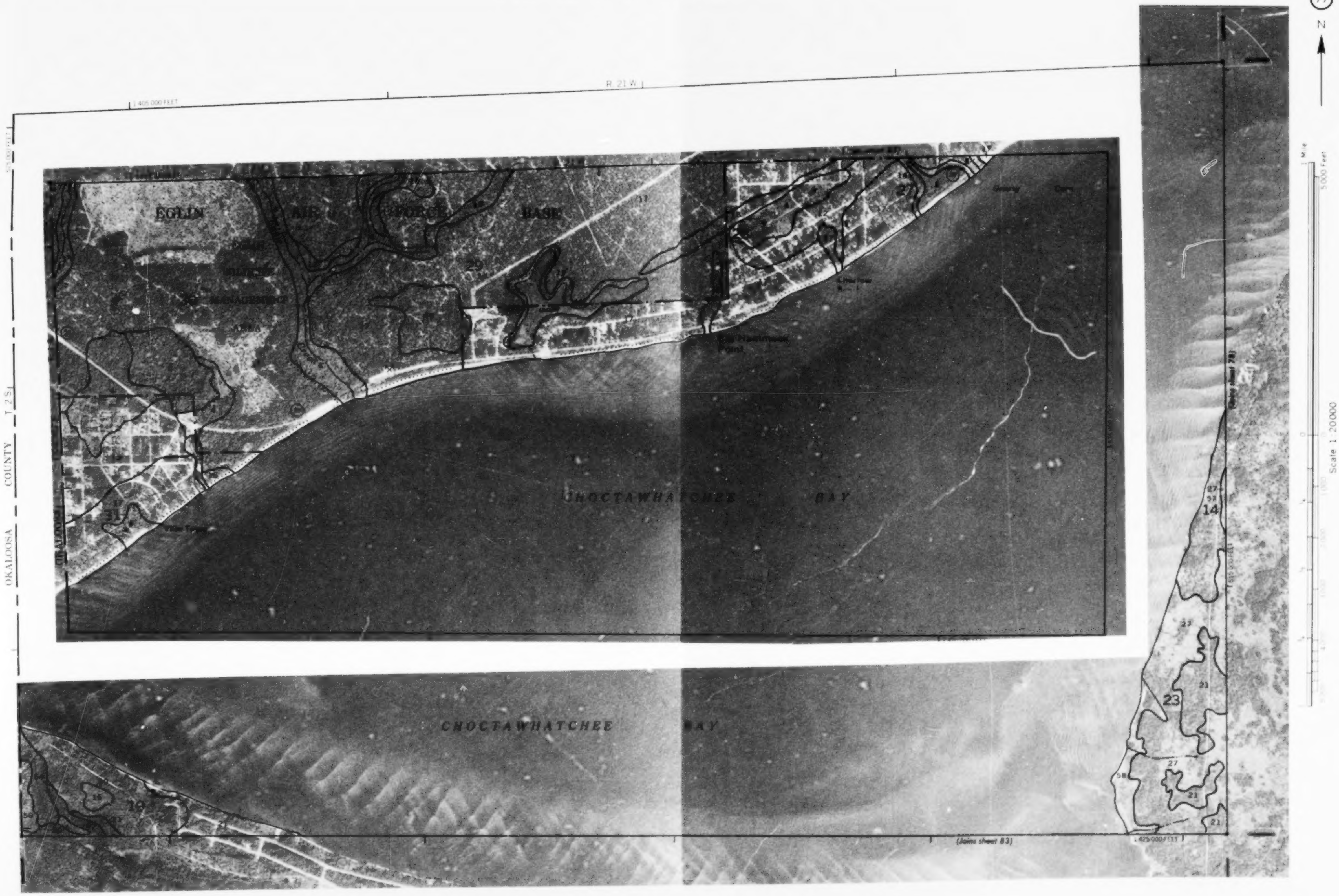

(Joins sheet 68)
(Joins sheet 80)
(Joins sheet 72)
(Joins sheet 74)
R. 19 W.
T. 1 S.
T. 2 S.
Fluffy Landing
Water
27
26
25
35
36
33
4
3
2
1
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000

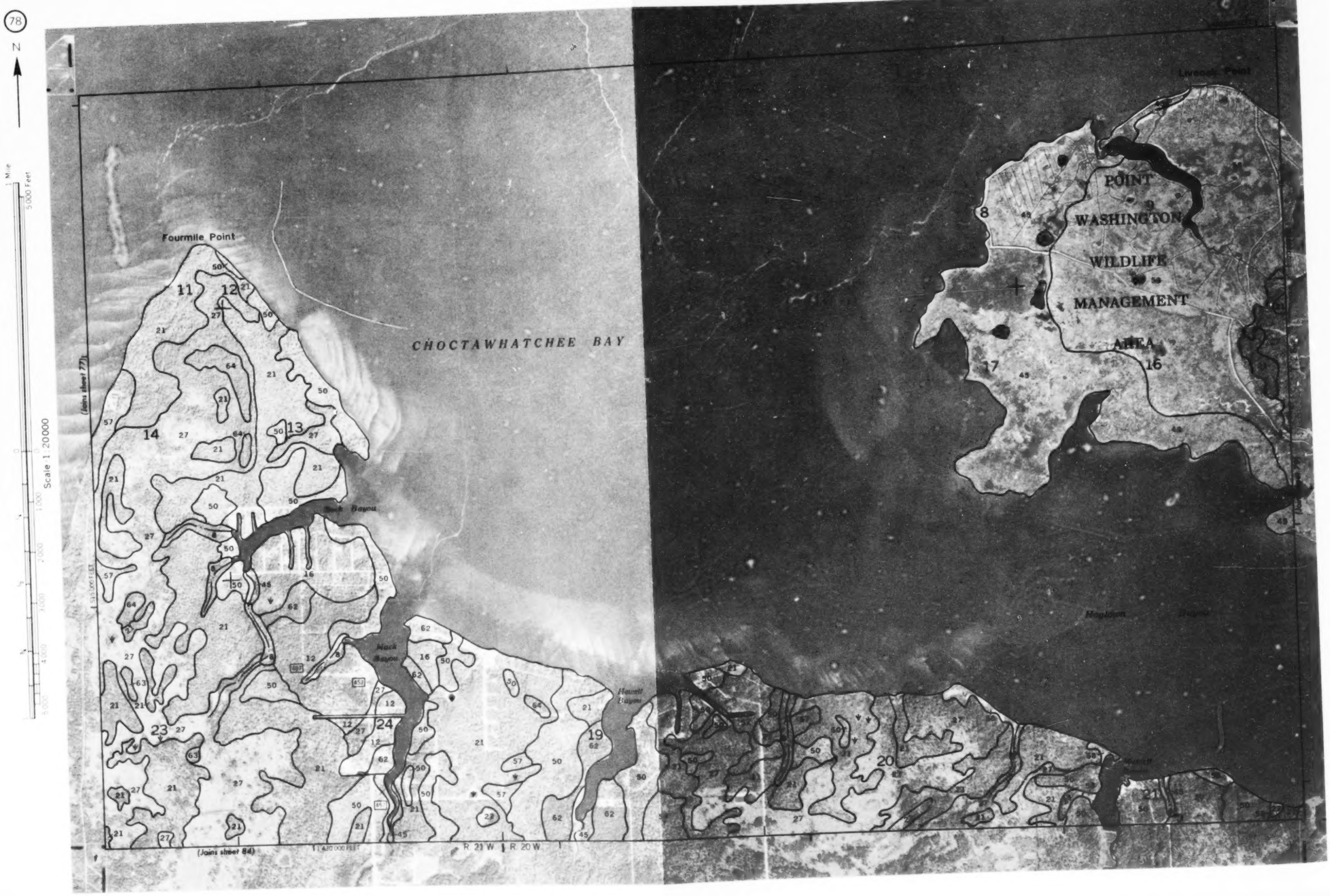
WALTON COUNTY, FLORIDA — SHEET NUMBER 74

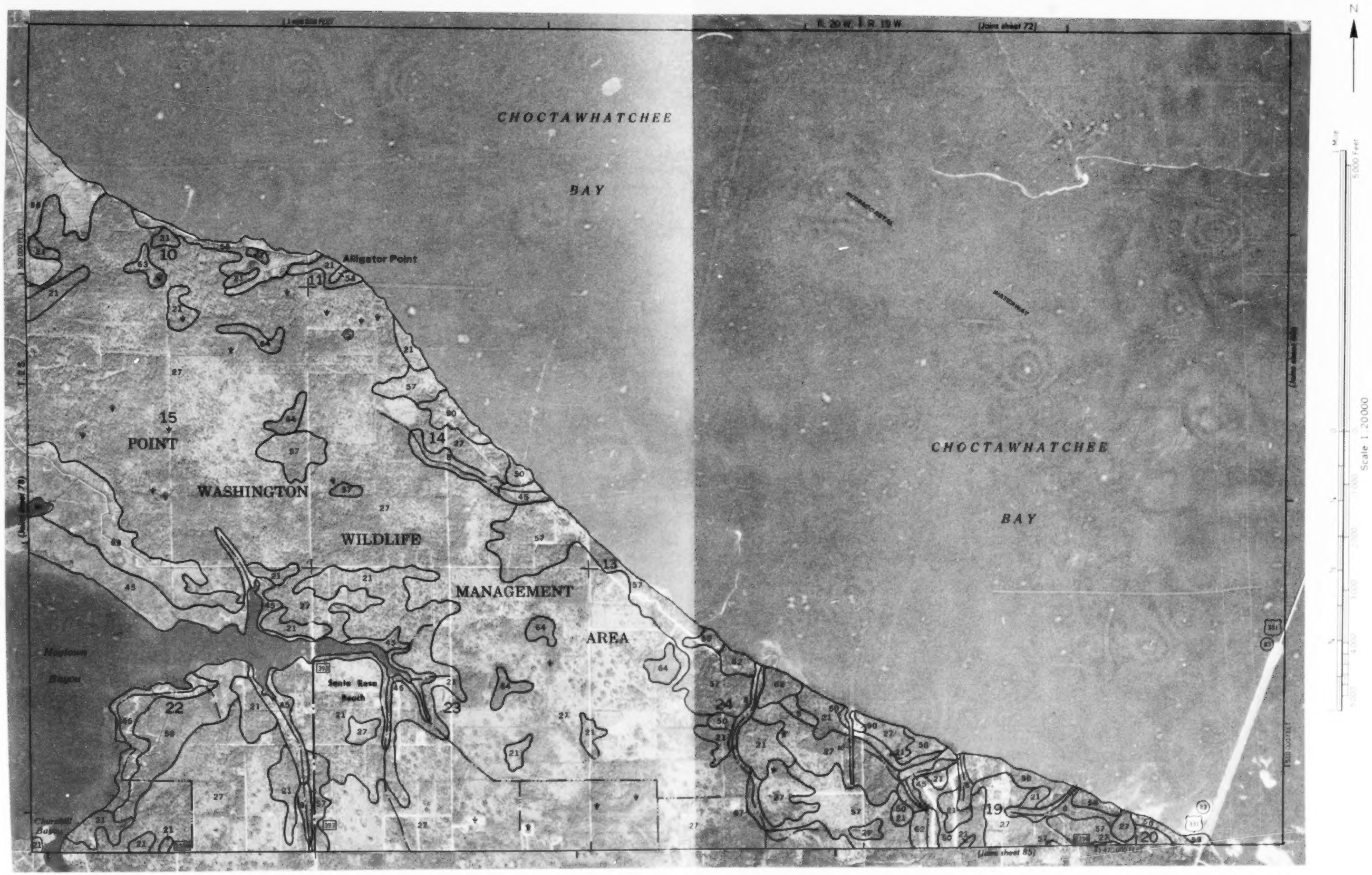

74
N
Scale 1:20000
1 Mile
5000 Feet
(Joins sheet 69)
(Joins sheet 73)
(Joins sheet 75)
(Joins sheet 81)
Turnpike Br.
Pot Branch
Camp Creek
Silver Branch
Black Creek
1 520 000 FEET
1 500 000 FEET
T 1 S
T 2 S
30
29
28
27
26
31
32
33
34
35
6
5
3
2

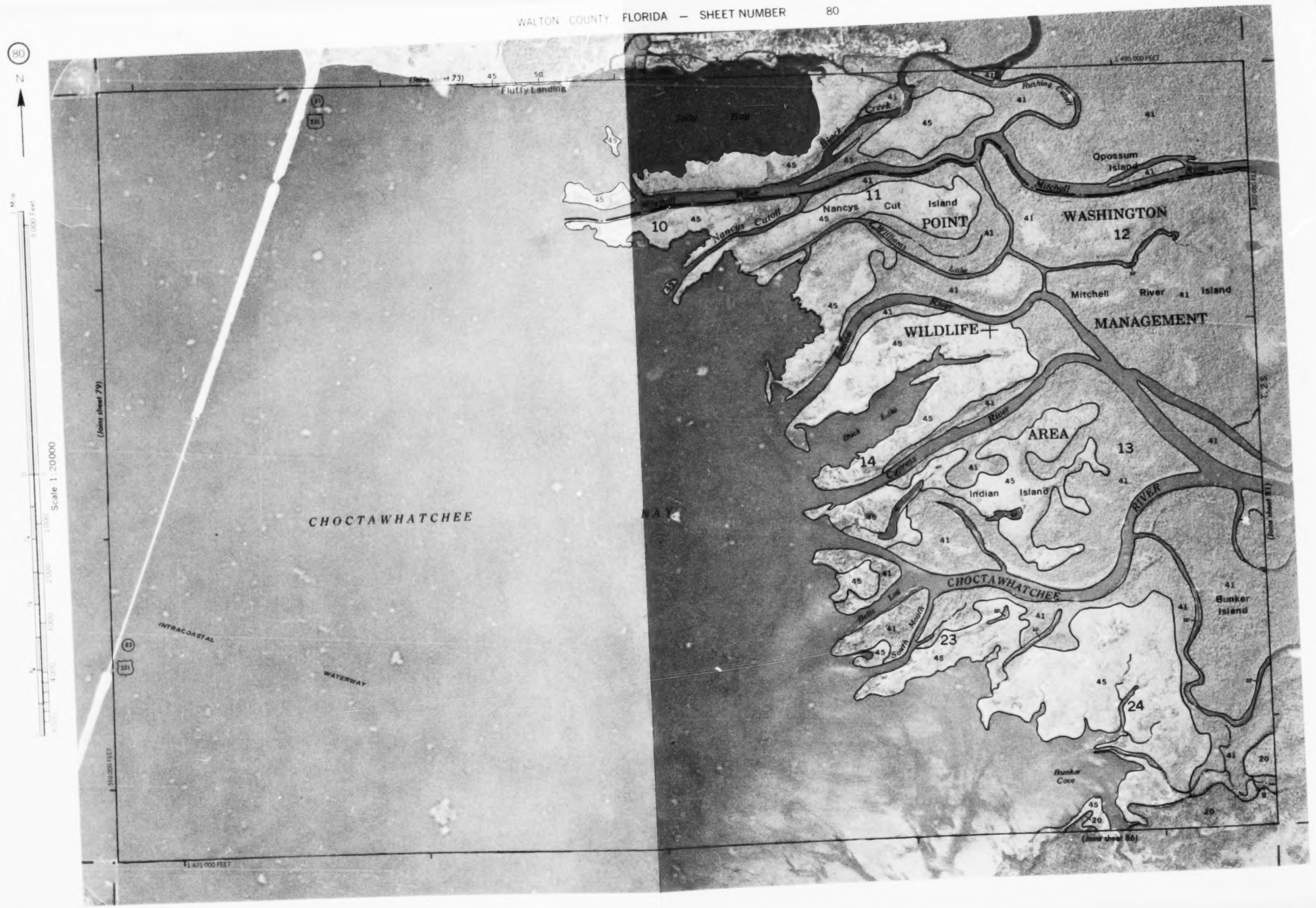

75
N
1 Mile
5000 Feet
Scale 1:20 000
R. 18 W.
R. 17 W.
(Joins sheet 70)
Bruce
26
25
30
29
28
35
31
32
33
36
6
5
T. 1 N.
T. 1 S.
Wise Camp
CHOCTAWHATCHEE RIVER
WASHINGTON COUNTY
(Joins sheet 88)

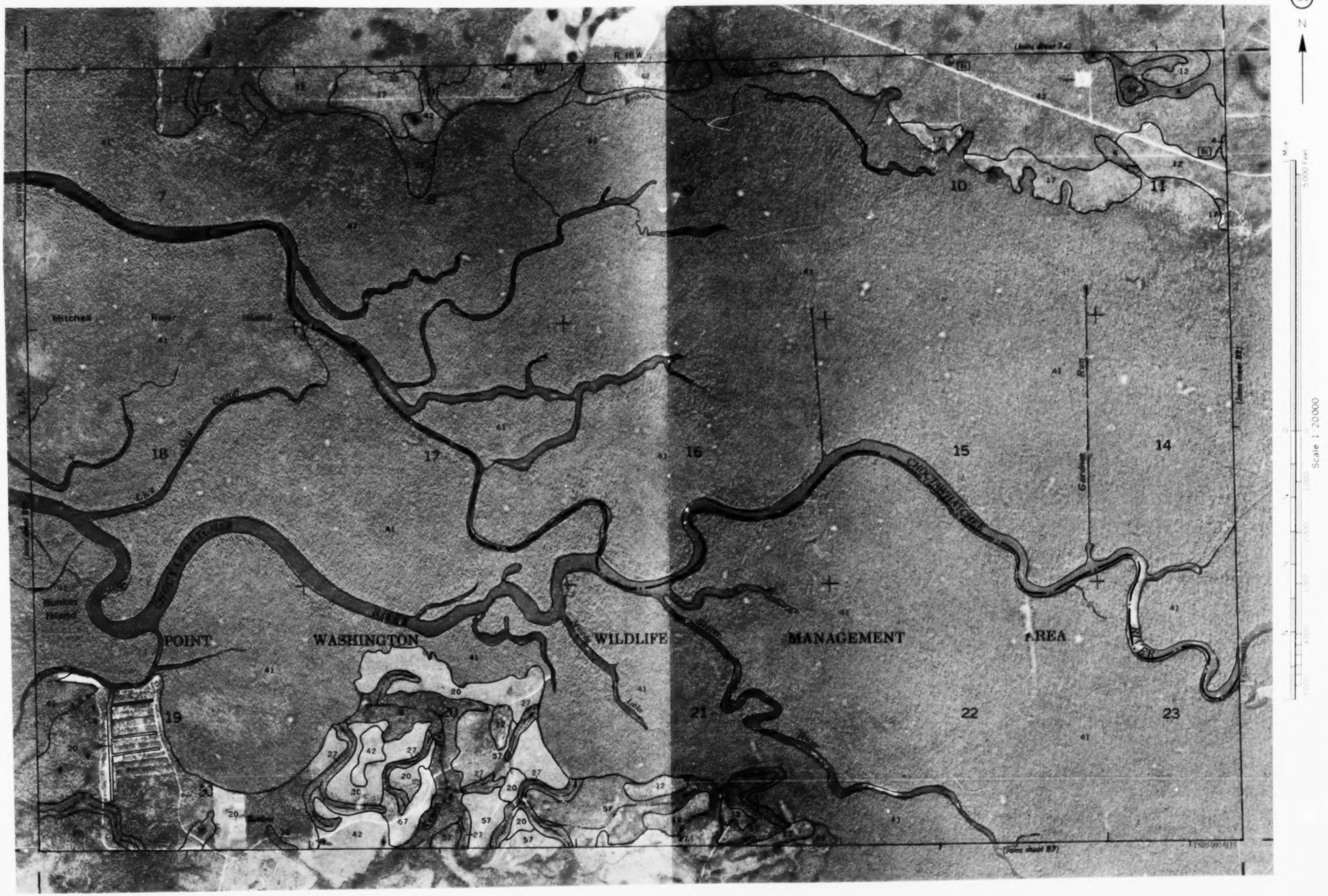

76
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 71)
(Joins sheet 75)
R. 17 W. R. 16 W.
R. 16 W.
T 1 N
T 1 S
CHOCTAWHATCHEE
RIVER
WASHINGTON
COUNTY
TALLAHASSEE BASE LINE
Dismal
Creek
Little Cypress Cr
Big Cr
Cowford Ferry
27
26
34
35
2
25
36
30
17
4
12
15
38
39
41
42
43
46
47
51
64
65
66
70

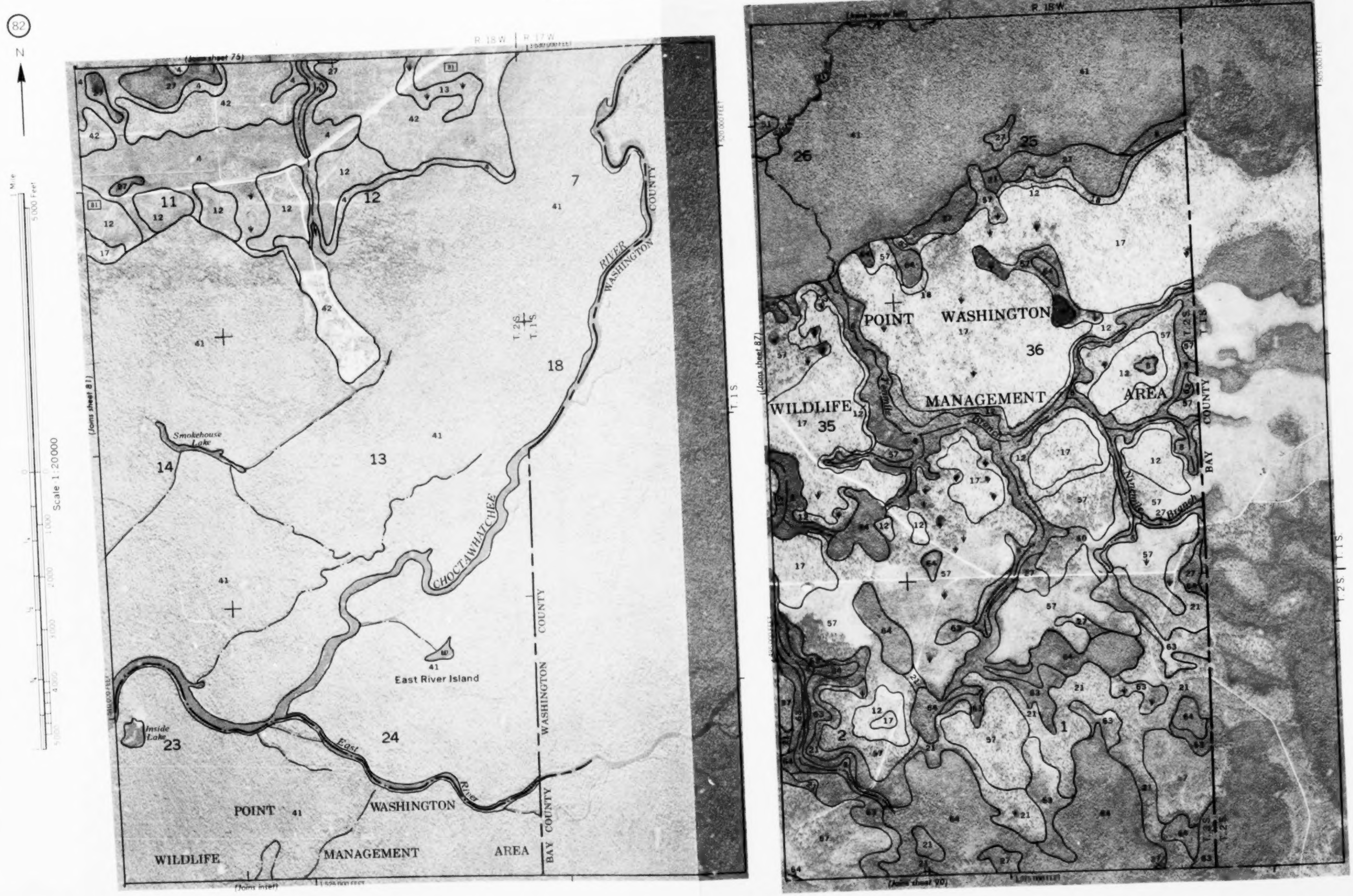

77
N
1 Mile
5000 Feet
Scale 1:20000
R. 21 W.
1 405 000 FEET
T. 2 S.
OKALOOSA COUNTY
OKALOOSA
EGLIN AIR FORCE BASE
MANAGEMENT AREA
CHOCTAWHATCHEE BAY
CHOCTAWHATCHEE BAY
Big Hammock Point
(Joins sheet 78)
(Joins sheet 83)
1 425 000 FEET
31
29
27
14
23
21
27
58
19
16


78
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
Fourmile Point
CHOCTAWHATCHEE BAY
Mack Bayou
Hewett Bayou
Hogtown Bayou
Liveoak Point
POINT WASHINGTON WILDLIFE MANAGEMENT AREA
(Joins sheet 77)
(Joins sheet 84)
R. 21 W. | R. 20 W.
1 430 000 FEET
11
12
13
14
16
17
19
20
21
23
24
8
9
27
45
50
57
62
63
64

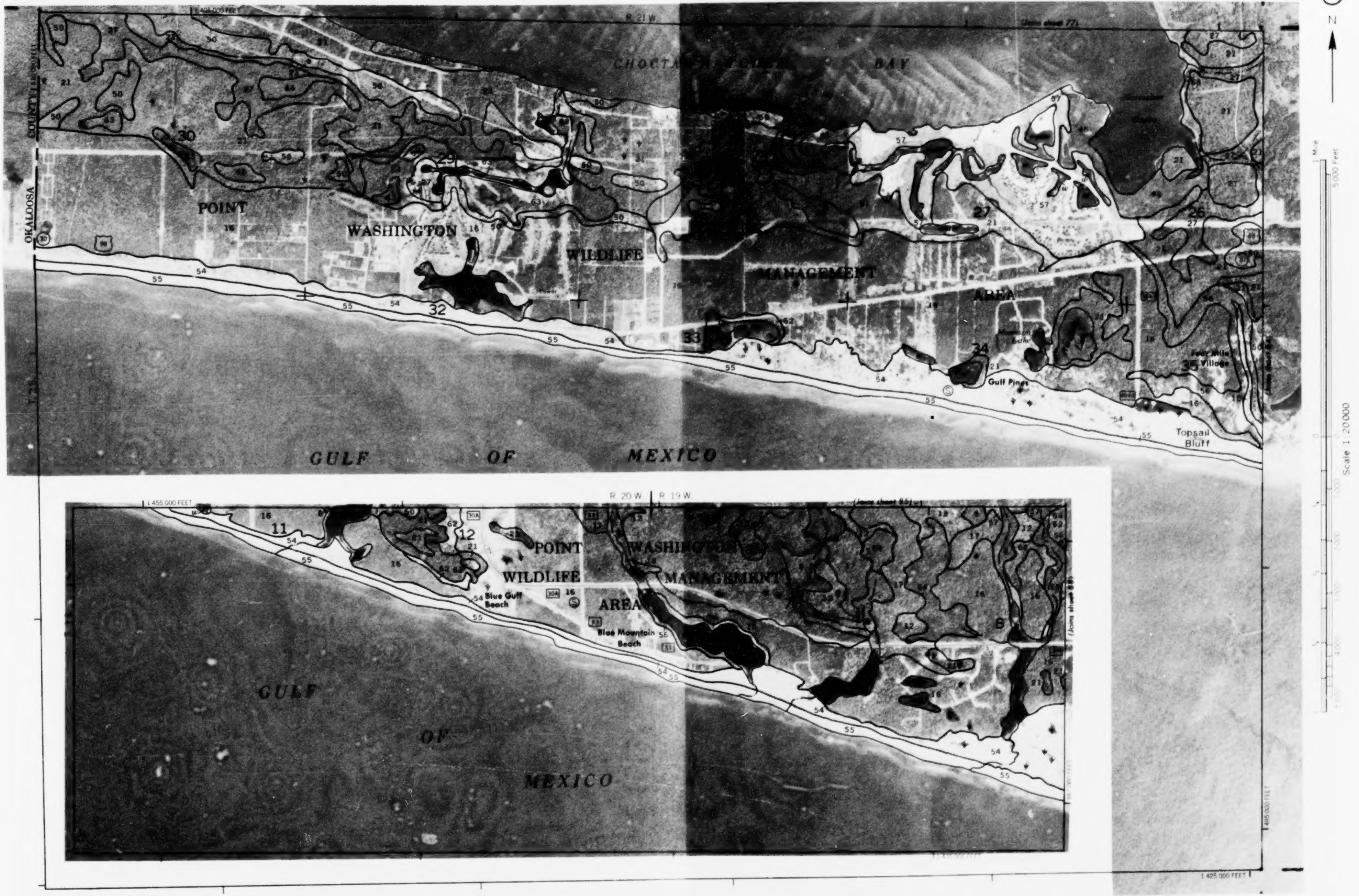

R. 20 W. | R. 19 W.
(Joins sheet 72)
(Joins sheet 78)
(Joins sheet 85)
CHOCTAWHATCHEE
BAY
CHOCTAWHATCHEE
BAY
INTRACOASTAL
WATERWAY
Alligator Point
POINT
WASHINGTON
WILDLIFE
MANAGEMENT
AREA
Hogtown
Bayou
Santa Rosa
Beach
Churchill
Bayou
10
11
13
14
15
19
20
22
23
24
T. 2 S.
N
1 Mile
5000 Feet
Scale 1:20000

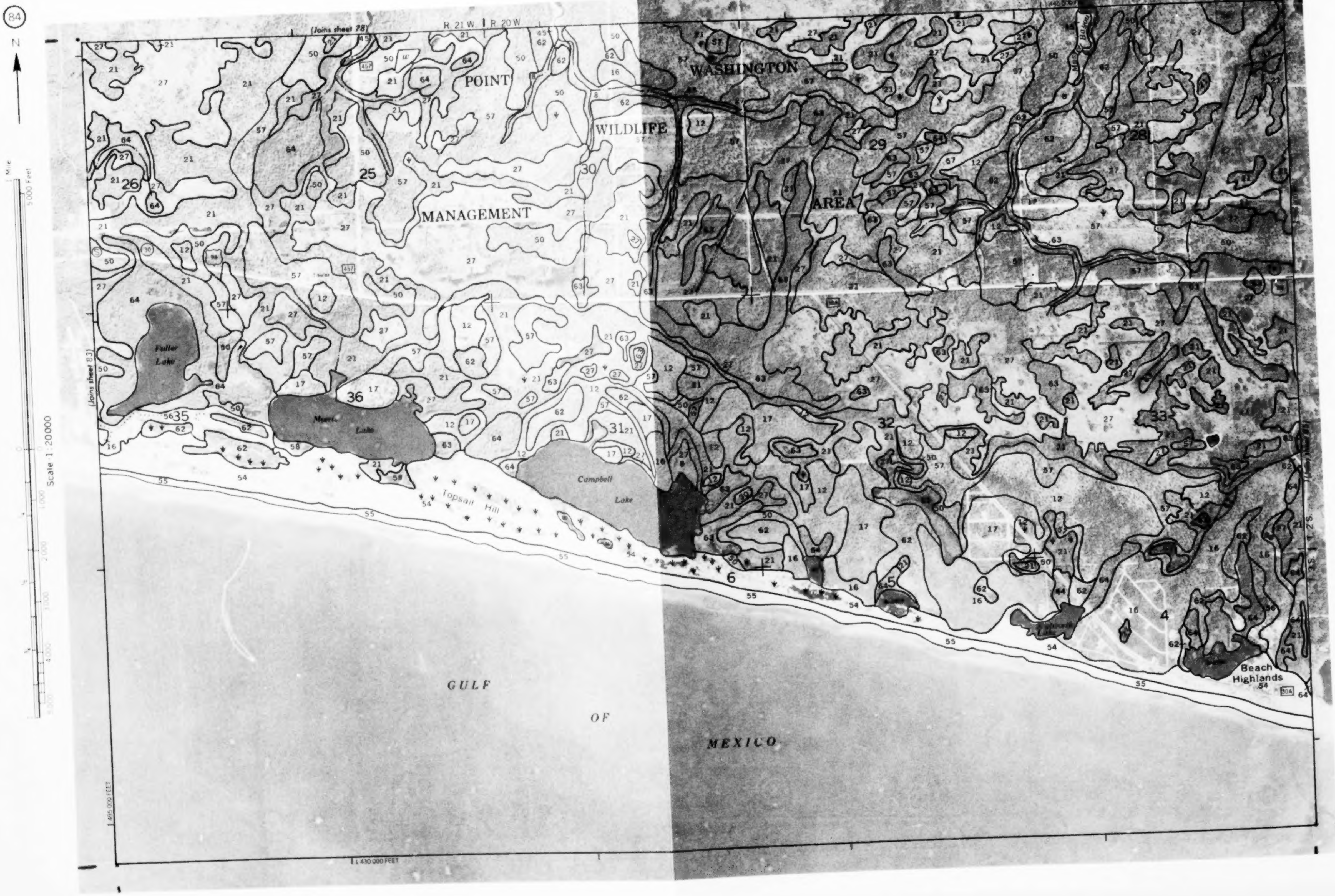

80
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
(Joins sheet 73)
45
50
Fluffy Landing
1 475 000 FEET
331
83
Jolly Bay
Black Creek
Rushing Cutoff
Opossum Island
Mitchell River
Nancys Cutoff
Nancys Cut Island
Williams Lake
POINT
WASHINGTON
Mitchell River Island
WILDLIFE
MANAGEMENT
AREA
Cypress River
Indian Island
Dock Lake
CHOCTAWHATCHEE
BAY
CHOCTAWHATCHEE RIVER
Bells Leg
South Mouth
Bunker Island
Bunker Cove
INTRACOASTAL WATERWAY
(Joins sheet 79)
(Joins sheet 81)
(Joins sheet 86)
510 000 FEET
10
11
12
13
14
23
24
20
41
45
w
8

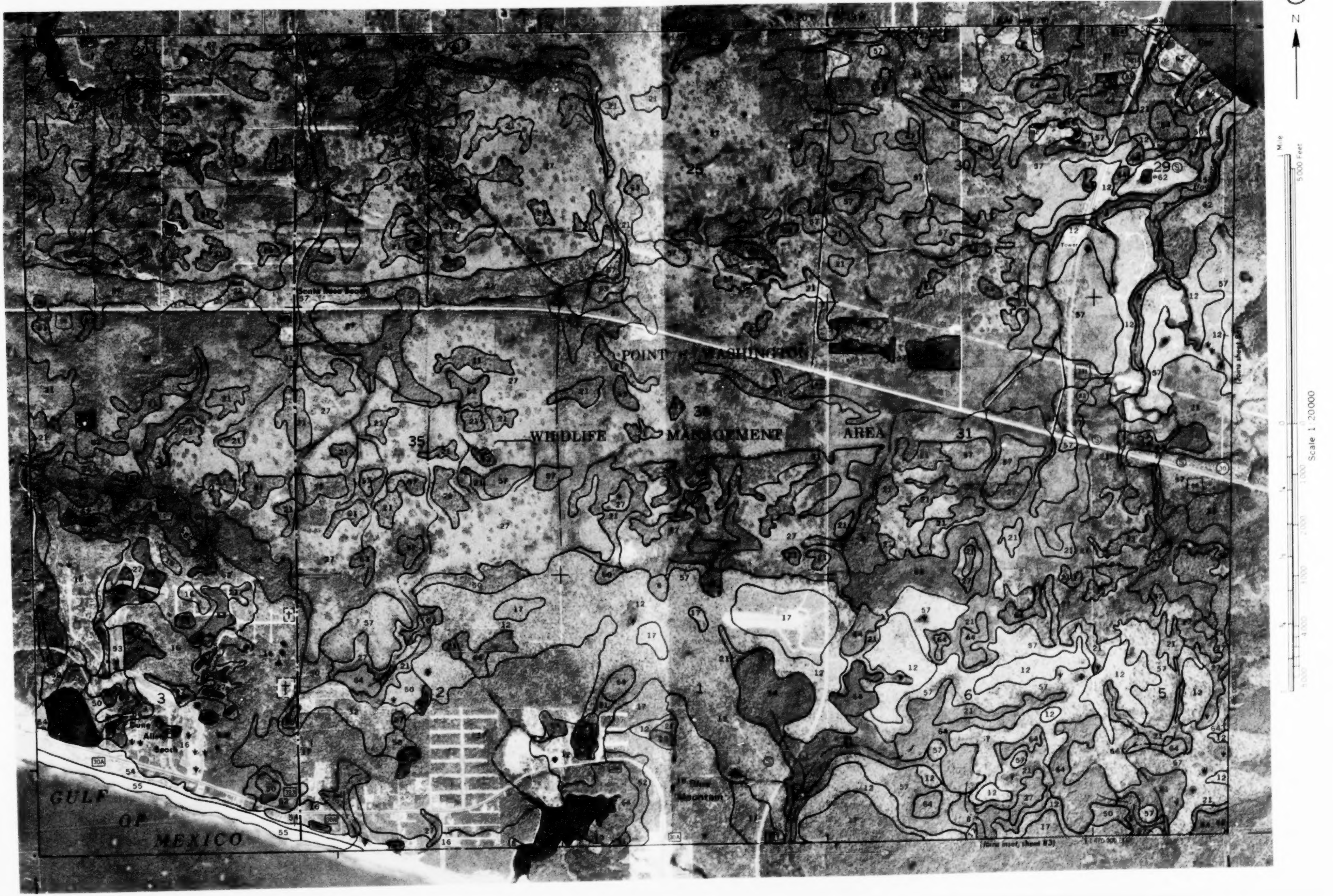

(81)
N
(Joins sheet 74)
(Joins sheet 82)
(Joins sheet 87)
7
8
9
10
11
18
17
16
15
14
19
20
21
22
23
Mitchell River Island
Live Oak Cutoff
Bunker Island
CHOCTAWHATCHEE
RIVER
Garden Run
POINT WASHINGTON WILDLIFE MANAGEMENT AREA
41
42
12
17
20
27
57
67
1 Mile
5000 Feet
0
1000
2000
3000
4000
Scale 1:20000

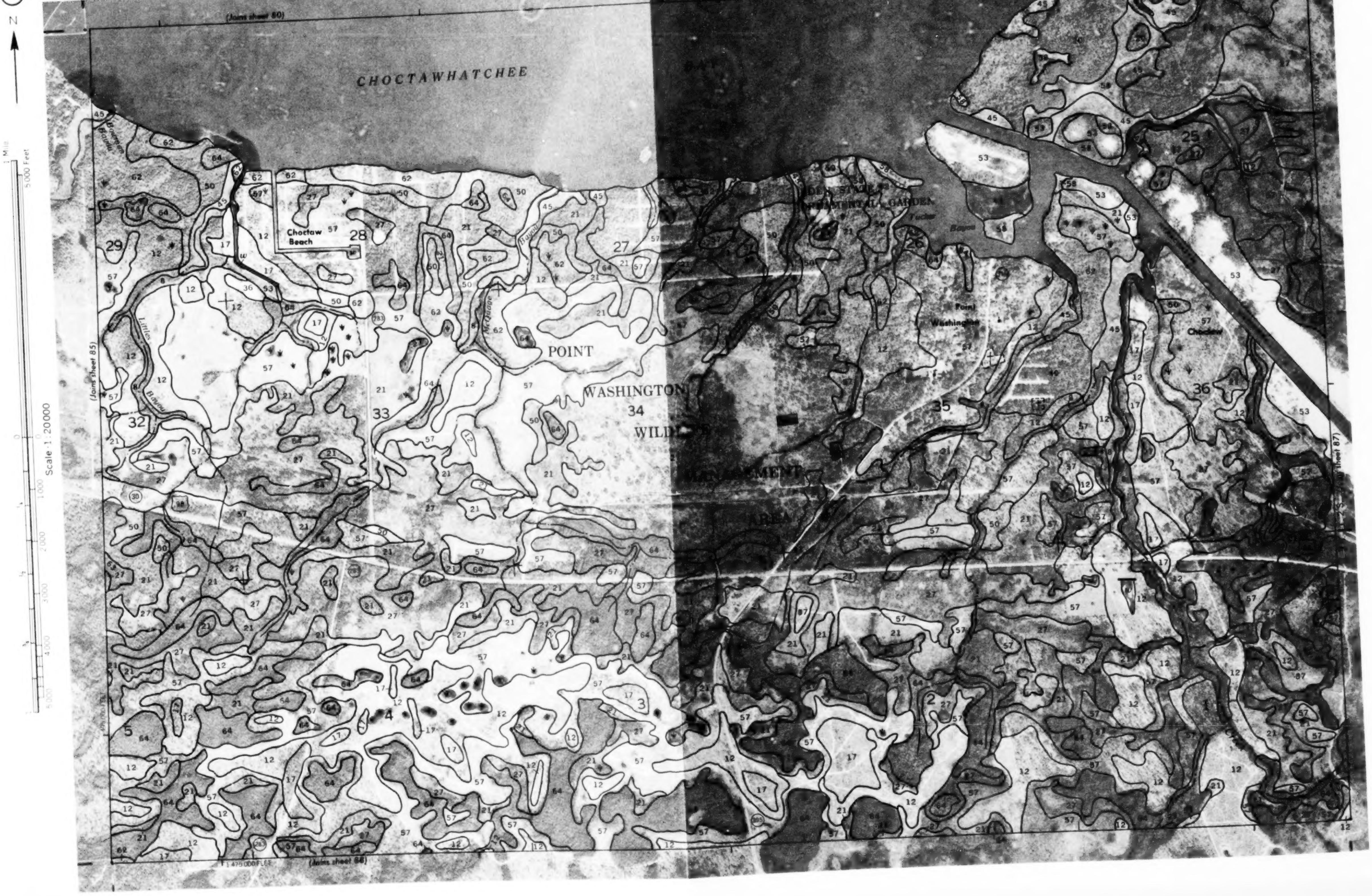

82
N
1 Mile
5000 Feet
Scale 1:20000
R. 18 W.
R. 17 W.
(Joins sheet 75)
(Joins sheet 81)
(Joins inset)
(Joins sheet 87)
(Joins sheet 90)
Smokehouse Lake
CHOCTAWHATCHEE RIVER
East River Island
East River
Inside Lake
POINT WASHINGTON WILDLIFE MANAGEMENT AREA
WASHINGTON COUNTY
BAY COUNTY
T. 1 S.
T. 2 S.
7
11
12
13
14
18
23
24
25
26
35
36
1
2

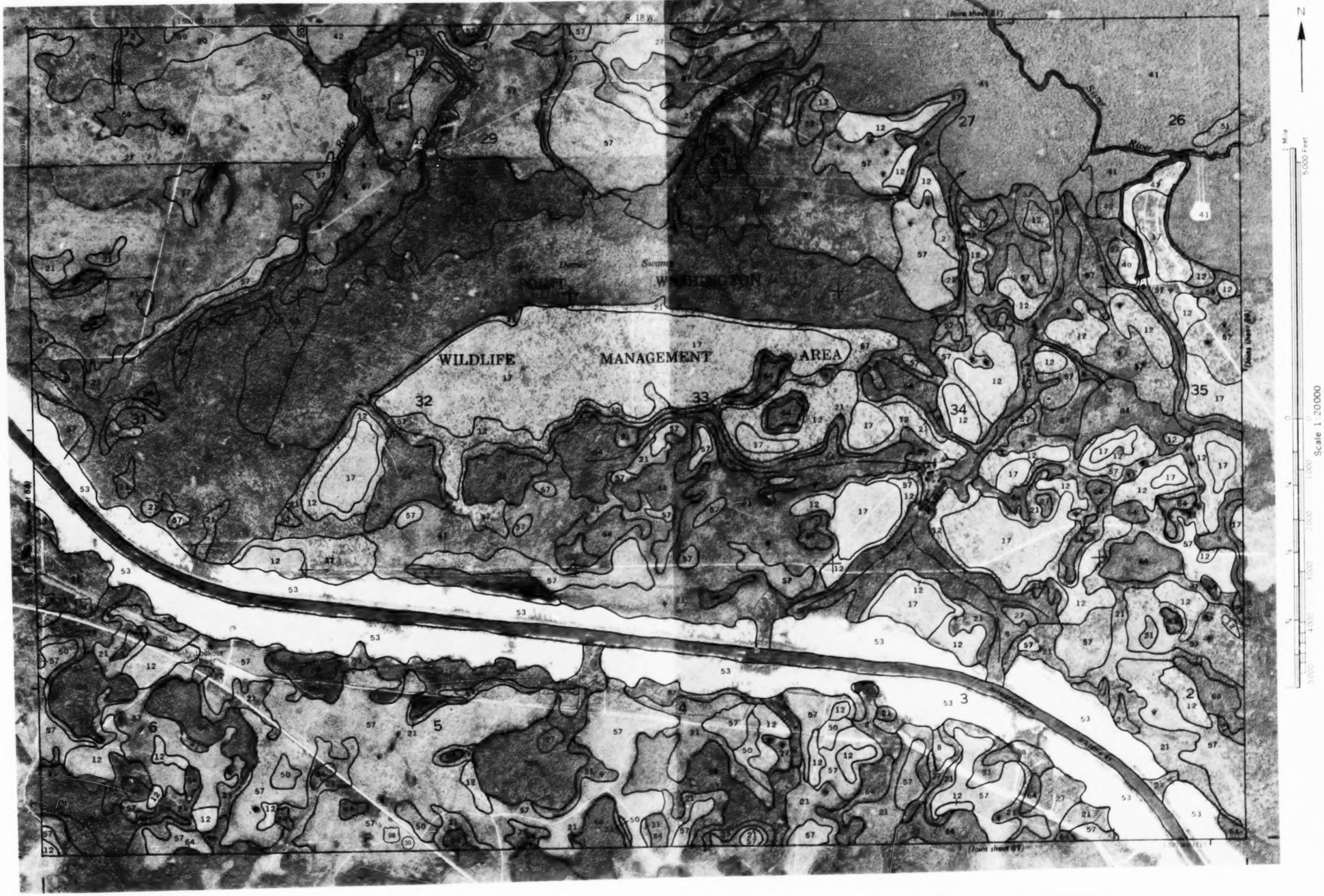
WALTON COUNTY, FLORIDA — SHEET NUMBER 83


83
N
R 21 W
R 20 W
R 19 W
1 405 000 FEET
1 455 000 FEET
1 425 000 FEET
485 000 FEET
(Joins sheet 77)
(Joins sheet 85)
(Joins sheet 88)
CHOCTAWHATCHEE BAY
OKALOOSA COUNTY
POINT WASHINGTON WILDLIFE MANAGEMENT AREA
Gulf Pines
Four Mile Village
Topsail Bluff
Blue Gulf Beach
Blue Mountain Beach
GULF OF MEXICO
1 Mile
5000 Feet
Scale 1:20000

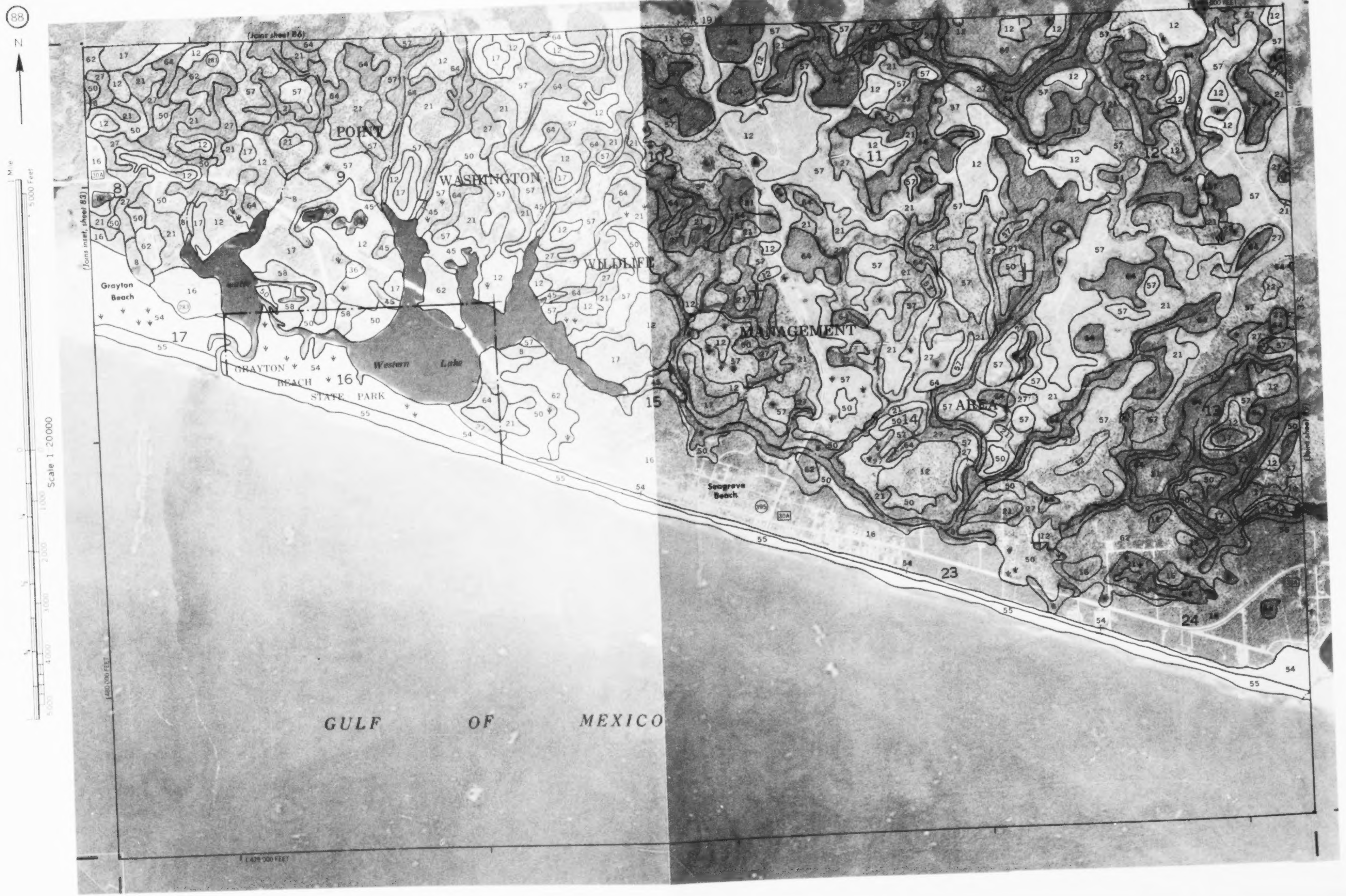

N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 78)
R. 21 W. | R. 20 W.
POINT
WASHINGTON
WILDLIFE
MANAGEMENT
AREA
(Joins sheet 83)
Fuller Lake
Morris Lake
Campbell Lake
Topsail Hill
Beach Highlands
GULF
OF
MEXICO
T. 2 S.
25
26
29
28
30
31
32
33
35
36
4
5
6
1 430 000 FEET
495 000 FEET

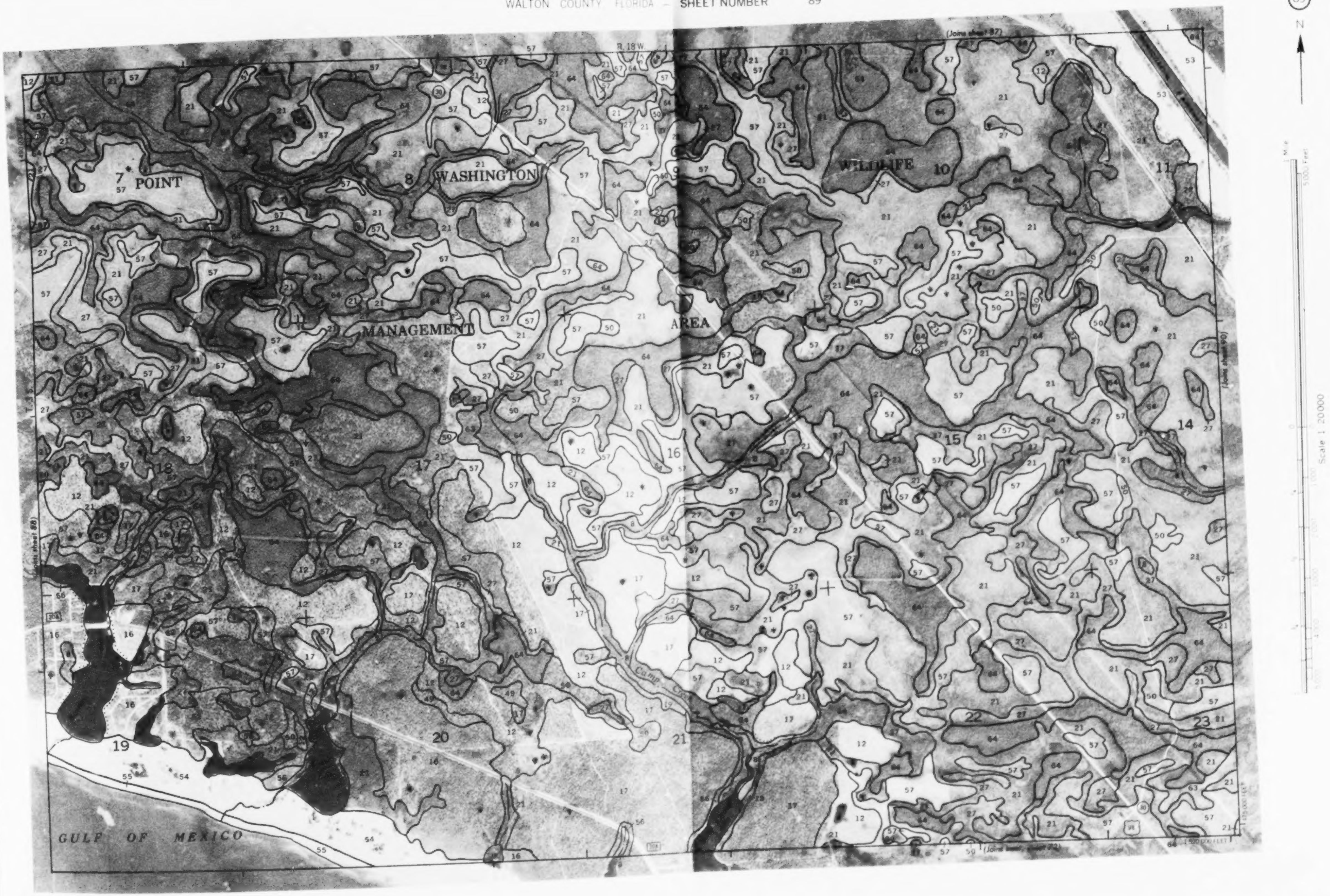

(85)
N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000
POINT WASHINGTON
WILDLIFE MANAGEMENT AREA
GULF OF MEXICO
25
30
29
35
36
31
3
2
1
6
5
Dune Allen Beach
Blue Mountain
30A
(Joins inset, sheet 83)

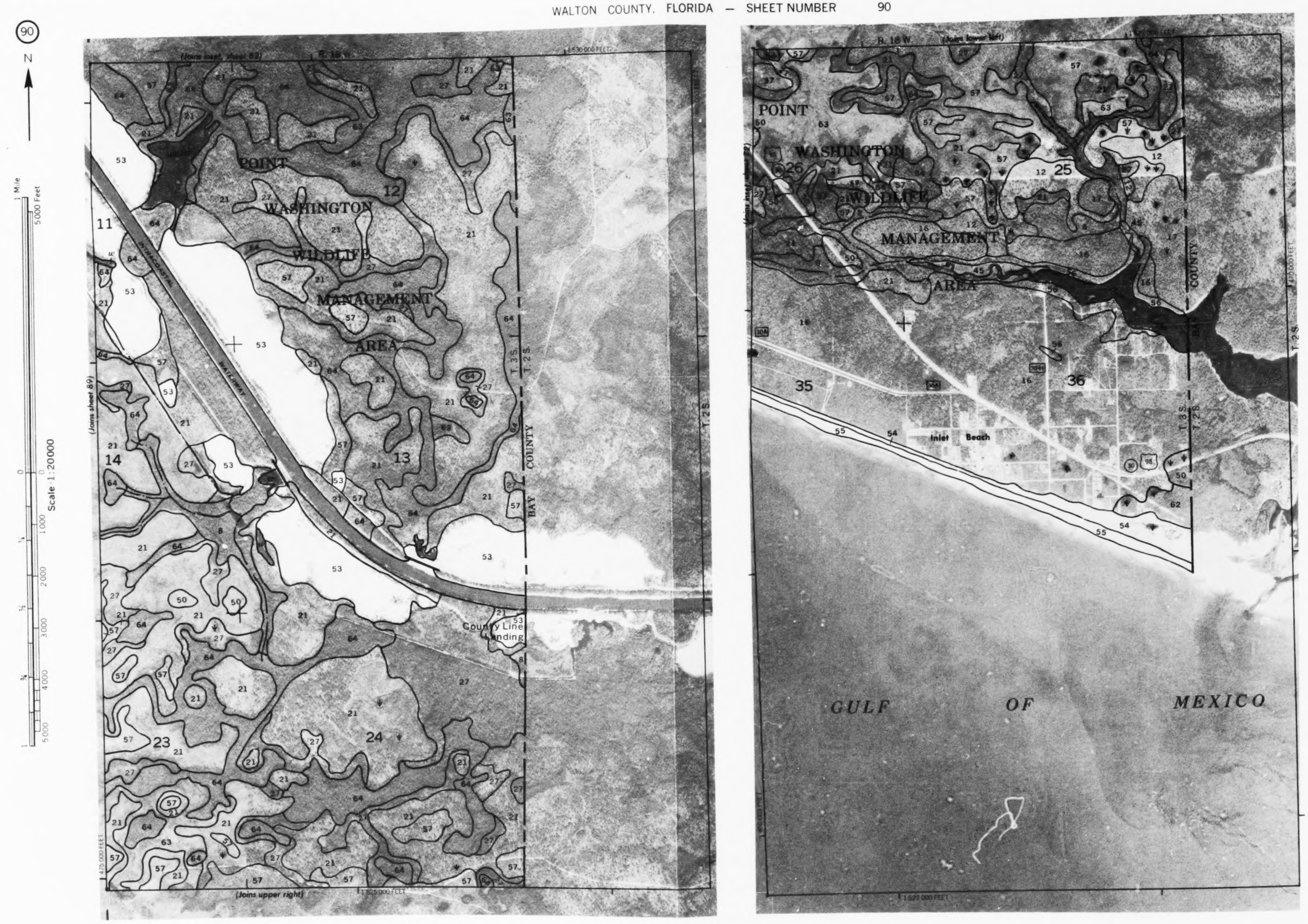

N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000
(Joins sheet 80)
(Joins sheet 85)
(Joins sheet 87)
(Joins sheet 88)
CHOCTAWHATCHEE
BAY
Choctaw Beach
Little Bayou
McQuage Bayou
POINT WASHINGTON WILDLIFE MANAGEMENT AREA
EDEN STATE ORNAMENTAL GARDEN
Tucker Bayou
Point Washington
Choctaw
1 475 000 FEET
29
32
33
28
27
34
26
35
25
36
5
4
3
2
1


R. 18 W.
(Joins sheet 81)
Devils Swamp
POINT WASHINGTON
WILDLIFE MANAGEMENT AREA
26
27
28
29
30
31
32
33
34
35
2
3
4
5
6
Lookout Tower
(Joins sheet 89)
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000

WALTON COUNTY, FLORIDA — SHEET NUMBER 88


(88)
N
(Joins sheet 86)
(Joins inset, sheet 83)
(Joins sheet 89)
POINT
WASHINGTON
WILDLIFE
MANAGEMENT
AREA
Grayton Beach
GRAYTON BEACH STATE PARK
Western Lake
water
Seagrove Beach
30A
395
283
GULF OF MEXICO
T 3 S
480 000 FEET
1 475 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000


N
(Joins sheet 87)
(Joins sheet 88)
(Joins sheet 90)
(Joins sheet 92)
R. 18 W.
POINT WASHINGTON WILDLIFE MANAGEMENT AREA
GULF OF MEXICO
Camp Creek
1 Mile
5000 Feet
Scale 1:20000


(90)
N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1
Scale 1:20000
(Joins inset, sheet 82)
R. 18 W.
1 530 000 FEET
POINT
WASHINGTON
WILDLIFE
MANAGEMENT
AREA
INTRACOASTAL WATERWAY
(Joins sheet 89)
BAY COUNTY
T. 3 S.
T. 2 S.
County Line Landing
(Joins upper right)
1 525 000 FEET
475 000 FEET
11
12
13
14
23
24
(Joins lower left)
25
26
35
36
30A
98
30
Inlet Beach
470 000 FEET
1 522 000 FEET
GULF OF MEXICO
8
12
16
17
21
27
45
50
53
54
55
56
57
62
63
64

WALTON COUNTY, FLORIDA NO. 90